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THE DEVELOPMENT AND PRELIMINARY EVALUATION OF A SELF-ADMINISTRED SCREENING INSTRUMENT FOR FIRST RANK SYMPTOMS AND BASIC SYMPTOMS IN PSYCHOTIC AND NON PSYCHOTIC DISORDERS

by

Borghild Bø, B.Psych, MAPS

A Thesis Submitted in Partial Fulfilment of the Requirements for the Award of Masters of Psychology (Clinical)

School of Psychology
Faculty of Health and Human Sciences
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30th June, 1999

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

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Abstract

The assessment of psychopathology is fundamental to clinical psychiatry. Schneider's (1959) First Rank Symptoms (FRS) are an integral part of numerous diagnostic criteria and Huber's Basic Symptoms (BS) are thought to form the basis of the FRS (Huber & Gross, 1989). The aim of the current study was to develop and evaluate a self-administered screening instrument to detect FRS and BS in clinical populations. A three stage design was used to achieve this. Stage one included the development of items and stage two was concerned with item analysis. Stage three comprised a pilot study in which a number of hypotheses were tested in the process of evaluating the instrument's performance. The sample comprised two groups of 51 psychiatric patients (probands) and 50 healthy controls. The probands were diagnosed through the administration of the Diagnostic Interview for Psychosis (DIP; Commonwealth Department of Health and Family Services, in press) and grouped by the Operational Criteria for Psychosis (OPCRIT; McGuffin, Farmer & Harvey, 1991) algorithm into categories of "schizophrenia", "other psychotic" and "non-psychotic" disorders in accordance with the International Classification of Diseases, 10th Revision (ICD-10; World Health Organisation, 1992a). The results showed that while healthy controls occasionally experience and report the First Rank and Basic Symptoms phenomena, the probands reported significantly more FRS and BS than the healthy controls ($p < .001$). FRS were reported significantly more frequently by patients diagnosed with schizophrenia than by patients diagnosed with "other psychotic" or "non-psychotic" disorders ($p = .004$). BS were reported more frequently by patients with schizophrenia compared with the other two groups,

however, the difference was not statistically significant. By using Kendall's tau correlation, the FRS and BS categories were found to be associated. This preliminary study presents data supporting the reliability, validity and the sensitivity of the screening instrument for detecting psychotic symptomatology in clinical populations. The results show that psychiatric patients can self-report their psychopathological experiences. With further development, this instrument may be a useful tool in a variety of clinical and research settings.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education. To the best of my knowledge and belief it does not contain any material previously published or written by another person, except where due reference is made in the text.

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30th June, 1999

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CHAPTER 1

Introduction

Schizophrenia, a disorder that alters profoundly all aspects of mental life and personality organisation, affects on average 1 out of 100 individuals in their lifetime. Although many of the dramatic symptoms of the disease, such as hallucinations and delusions, can now be effectively controlled by pharmacological means, insidiously developing impairments of will and motivation, affective response and cognitive functioning tend to persist, leading to chronic disability and reduced quality of life. Schizophrenia is a clinically complex disorder and its diagnosis requires a careful evaluation of the individual's life history and present mental state. While no single symptom or sign can be said to be exclusively characteristic of schizophrenia, clinical research over many decades has helped in identifying constellations of subjective phenomena and objective behavioural signs that increase the probability of correct diagnosis and, hence, of timely commencement of appropriate treatment. The so-called First Rank Symptoms (FRS; Schneider, 1959) and Basic Symptoms (BS; Huber & Gross, 1989) are thought to belong to the category of diagnostically informative manifestations of the disease.

FRS and BS are prominent symptoms characteristic of schizophrenia. The diagnosis of schizophrenia is in turn dependent upon patients' subjective report of abnormal experiences. According to Huber and Gross (1989) the presence of FRS

and BS represents different characteristic stages of the same disease. The presence of FRS is highly suggestive of psychosis and usually indicative of schizophrenia, though not necessarily "pathognomonic" of that disorder (Schneider, 1959). Huber's BS are subtle prodromal subjective experiences that may precede and predict FRS formation. The FRS include specific types of auditory hallucination, "subjectively experienced" thought disorder and experience of "replacement of will" (Schedule for Clinical Assessment in Neuropsychiatry (SCAN), Wing et al., 1990; World Health Organisation [WHO], 1992b). The BS are characteristic of cognitive deficiencies in thought, perception and psychomotor behaviour, cenesthesias, dynamic and autonomic symptoms (Huber & Gross, 1989).

The concepts of both FRS and BS are widely used in Europe, particularly in Germany, by clinicians and researchers in the study of psychotic phenomenology. More specifically, BS are prominent in the study of prognostic validity of schizophrenia and FRS, in the diagnosis of schizophrenia.

There are several structured clinical interviews designed to examine the symptomatology and diagnostic criteria of schizophrenia, but these are time consuming and cannot be readily applied in studies on large samples, including non-clinical populations. Assessments of severe psychiatric disorders with self-rating instruments have not yet received wide acceptance (Atkinson, Zibin & Chuang, 1997). As such there are few standardised self-administered instruments for population studies (Hamera, Schneider, Potocky & Casebeer, 1996).

The aim of this study is to develop an effective self-administered screening instrument, specifically designed to detect the subjective experience of FRS and BS. This study will attempt to show that it is possible to develop a reliable and valid self-report instrument that is sensitive to the presence of FRS. The inclusion of BS-related items broadens its utility as a screening tool and allows an exploration of the relationship between BS and FRS. The items in the self-administered screening instrument have been derived from the Frankfurt Complaint Questionnaire (FCQ; Scharfetter, 1995; Süllwold, 1977) and the SCAN, Version 2.0. When fully validated and in its final form, this instrument is likely to facilitate a variety of clinical and research applications.

1.1 Research into schizophrenia

Schizophrenia was first described as a hypothetical disease entity in the late 19th century. Its delineation from other psychiatric disorders and the description of its symptomatology and course were the great achievement of Emil Kraepelin in 1986 who named the condition dementia praecox. It was re-designated as schizophrenia by Eugen Bleuler (1911).

Schizophrenia has been a major focus of research within psychiatry for nearly a century, yet its pathophysiology and causation remain "intractable to understanding" (Jablensky, 1997, p. 111). The history of schizophrenia research is summarised by Jablensky (1997, p. 111) as

> ...a chronology of recurrent themes, many promising clues that have subsequently been abandoned, and a plethora of explanatory models of which none has yet been either categorically rejected or unequivocally proven. It is remarkable that many of the current research ideas are, in fact, rediscoveries of early observations and hypotheses, many of them datable to the first decades following the adoption of the Kraepelinian diagnostic scheme.

1.1-1 What is schizophrenia

One of the apparent obstacles to research into this disorder is the lack of a firmly grounded definition of its scope and boundaries. Jablensky et al. (1992) consider schizophrenia as "an entity defined almost exclusively by its clinical symptoms and their characteristic evolution over time" (p. 94)... 'not externally validated and lacking a strong empirical basis'.

Multiple and polymorphous symptom characteristics of schizophrenia have been proposed and promulgated, reflecting different nosological systems, based on the "Professor principle"(e. g., Bleuler, 1911; Kraepelin, 1919; Schneider, 1959) initially, and increasingly since the 1970's on the consensus of experts (Feighner's criteria (Feighner et al., 1972); Research Diagnostic Criteria (RDC; Spitzer, Endicott & Robins, 1978); Diagnostic and Statistical Manual of Mental Disorders III, III-R, IV (DSM; American Psychiatric Association [APA], 1980, 1987, 1994); International Classification of Diseases (ICD-10; WHO, 1992a)).

A century after Kraepelin, phenomenology (Jaspers, 1963) remains as a cornerstone in the study of the psychopathology of schizophrenia. Despite conceptual refinements and modifications, current classification systems are still based on Kraepelin's categorical nosology of the psychoses. An empirical study (Jablensky, Hugler, von Cranach & Kalinov, 1993) of a sample of Kraepelin's original case descriptions concluded that the concept of schizophrenia in the 1970's (ICD-9) was still broadly consistent with Kraepelin's dementia praecox in 1908. Notwithstanding the broad continuity and consistency of the concept, individuals diagnosed with schizophrenia, regardless of the diagnostic system used, are likely to show wide variation in clinical presentation, course and response to treatment (Amador & Gorman, 1998). This heterogeneity of manifestations suggests that several different underlying pathological processes may be involved.

There are at present no definitive laboratory or other objective tests that can be used to diagnose schizophrenia or other psychotic disorders independently of the clinical history and psychopathology. Therefore, precise eliciting, recording and interpretation of characteristic subjective experiences (phenomenology) and the use of skilled observation of behaviour, including speech and expression of affect, are relied upon to make a diagnosis (McGuffin, Farmer & Harvey, 1991). Since the key symptoms of schizophrenia are primarily subjective, the process of reliably eliciting and identifying such phenomena is complex.

Although not ideal (Kay, 1990), highly specific diagnostic criteria and definitions are now used as a reference point in the study of psychiatric disorders.

ICD-10 and DSM-IV are salient examples of this. These two contemporary classifications contain operational diagnostic criteria specifying the minimum requirements for a reliable diagnosis of schizophrenia to be made. Although ICD-10 and DSM-IV differ in some of the details, they essentially identify the same clinical entity.

Various models and theories have been proposed to account for the broad range of symptomatology and the variable course of schizophrenia. The "diathesis-stress" model (Meehl,1962, 1989, 1990) proposes that those who are genetically predisposed to developing the disorder only do so when environmental and polygenic potentiators interact to actuate the predisposition. The genetic predisposition ("schizotaxia") is considered to be relatively common and distributed throughout the population, and to underlie a range of the "schizophrenia spectrum" disorders including schizotypal personality disorder.

Meehl (1990) suggests that 10% of the population has the predisposing genetic trait which produces subtle neurological and psychophysiological individual differences, reflecting a neurointegrative defect. According to the model, the interaction of a combination of certain environmental influences and polygenic potentiators with the genetic trait determines an individual's threshold of decompensation (Meehl, 1990). This is also referred to as the "stress vulnerability" model (Zubin and Spring, 1977). Nuechterlein et al. (1994) have also proposed a number of "stress markers" of vulnerability.

Results from family, twin and adoptive studies over several decades have demonstrated a strong genetic component in the causation of schizophrenia (e. g., Cardno & McGuffin, 1996; Ingraham, Kugelmass, Frenkel, Nathan & Mirsky, 1995; McGuffin, Asherson, Owen & Farmer, 1994; Nestadt et al., 1994; Parnas et al., 1993; Tyrka et al., 1995; Wang et al., 1995). The precise nature of the genetic factors involved is yet to be determined by molecular genetic research. The majority of recent studies on large samples of families, including complete genome scans, point towards a polygenic transmission of genetic risk (DeLisi, 1999; Jablensky, 1999). However, genetic risk may be a necessary but not sufficient factor in the aetiology of the disorder, since the concordance rate for schizophrenia in monozygotic twins is less than 50%, and a number of population-based studies implicate environmental risk factors. Such risk factors include complications of pregnancy and childbirth, early brain damage, and possibly, viral infection (Jablensky, 1999). Neurocognitive investigations and brain imaging studies suggest that relatively characteristic neurointegrative deficits may underlie the symptoms of schizophrenia.

Bentall, Jackson and Pilgrim (1988) promoted a focus on individual symptoms rather than syndromes in their entirety. This focus became the impetus for an increase in neuropsychological and neuropathological research (Bentall, 1994). The resulting neuropsychological theories of the symptoms of psychosis have been summarised by Frith (1992, 1995) and Hemsley (1994).

Whether schizophrenia represents the extreme end of a continuum of normality is yet to be shown. Building on Strauss' (1969) view, differences are defined as points on a continuum of normality as opposed to a categorical difference between normal and abnormal beliefs (Chadwick & Lowe, 1990: Garety, 1985; Garety & Hemsley, 1994; Kendler, Glazer & Morgenstern, 1983; Maher, 1988; Sharp et al., 1996; Spitzer, 1990). If this proposition is to be tested, psychometrics are required in order to measure the plausibility of continuous variation in population based research.

Despite a shift from the categorical dichotomy to the more descriptive continuous spectrum proposal (Spitzer, 1992; Garety & Hemsley, 1994), a "symptom only" focus has been considered unsatisfactory (Chadwick, Birchwood & Trower, 1996) because it is not firmly based on theory. Chadwick et al. proposed a "person model" in order to understand the symptoms in a broader perspective. This reflects the effort of integrating neuropsychological and psychological vulnerabilities of the individual which may produce certain symptoms in certain contexts.

1.1-2 Symptoms of schizophrenia

The characteristic symptoms of schizophrenia occur in multiple areas of psychopathology and include not only first rank psychotic phenomena, thought and speech disorders, but also disturbances of affect, mood and volition, catatonic signs, negative symptoms, deficits and neurological (hard and soft) signs. As FRS and BS

form the basis of the instrument that was developed in the present study, these symptoms will be defined and discussed in some detail following an outline of other proposed ways of grouping the symptoms of schizophrenia.

The diversity of symptomatology has been documented well in the schizophrenia literature since Bleuler (1911) and Kraepelin (1919). Both Kraepelin and Bleuler described the negative symptoms (as they are now termed) as being fundamental to the diagnosis of schizophrenia. Kraepelin, in his definition of dementia praecox, described emotional dullness, the absence of independent impulses of the will and increased susceptibility to experiences of influence and passivity. Bleuler described its "fundamental symptoms" as autism, ambivalence, and disturbances of association and affect. He viewed the positive symptoms (hallucinations, delusions and catatonic symptoms) as accessory and not necessary for the diagnosis.

Kraepelin (1919) proposed a dichotomous model for the classification of the functional psychotic disorders, based mainly on their course and outcome. This model proposes a deteriorating course and poor prognosis for dementia praecox, and a more favourable remitting course for manic depressive illness. Being unable to adequately accommodate the heterogeneity of his patients' symptoms into one category, Kraepelin identified three separate subtypes (paranoid, catatonic and hebephrenic (disorganised)). These categories are incorporated into the modern nosological nomenclature (DSM-IV; ICD-10). The reliability of diagnosis and the predictive validity of the subtypes have been questioned (Amador and Gorman,

1998; Carpenter and Stephens, 1979). It has also been suggested that the subtypes do not represent independent dimensions underlying the symptomatology (Jablensky, 1997). By using a symptomatological approach, complemented with neurocognitive and neuropsychological measurements, it may eventually be possible to link psychopathology to specific underlying fundamental mechanisms.

The positive and negative distinction

In the ongoing effort to find a common theme or pattern in the variation of symptomatology, symptoms of schizophrenia have been grouped into different psychopathological clusters. One such pattern is based on the distinction between so-called positive and negative symptoms (Andreasen & Olsen, 1982; Crow, 1980, 1985; Strauss, Carpenter & Bartko,1974). Traditionally, positive symptoms refer to qualitatively abnormal phenomena of mental life produced by the pathological process itself, for example delusions, hallucinations, and formal thought disorder. Negative symptoms on the other hand refer to losses and deficits of normal function, caused by the disease process, such as flat affect, alogia, asociability, apathy, and attentional impairment. Crow (1980) suggested that the positive symptoms (dominated by hallucinations and delusions) are associated with dopamine excess and the negative symptoms (pervasive deficit and loss of function) are associated with structural brain deficit and cognitive impairment.

To date, there has been no consensus or firm theoretical foundation as to which symptoms precisely constitute the positive or negative domains. For example, formal thought disorder and catatonic symptoms are usually regarded as positive symptoms. However, it is not clear that they exclusively belong to either the positive or the negative domain (Kitamura, Okazaki, Fujinawa, Yoshino & Kasahara, 1995), with some scales representing thought disorder as a negative symptom (Walker & Lewine, 1988).

Furthermore, Walker and Lewine (1988) concluded that only six symptoms were consistently included in all existing symptom scales. They categorised them as either positive (delusions, hallucinations and thought disorder) or negative (affective flattening, poverty of speech or speech content and loss of drive). Nineteen symptoms (e. g., bizarre behaviours, excitement, pressure of speech, social withdrawal, apathy and motor retardation) were found to be included only in some scales, but were consistently categorised. Seven symptoms were neither consistently categorised nor included in common clinical scales. These were: loose associations, incoherent speech, irrelevant speech, wandering speech, inappropriate affect, catatonic motor behaviour and attentional impairment.

Attempting to overcome the negative and positive dichotomy of psychopathology in schizophrenia, German psychiatrists asserted that negative, BS and positive symptoms (including FRS) are not separable, but rather they are symptoms which are stages of the same disease and "...conceptualized as existing on a psychopathological continuum." (Huber & Gross, 1989, p. 648).

Symptom factors and dimensions

Since the 1980's, there has been an increasing trend to use dimensional classifications of schizophrenic symptom domains. This has usually been performed through the use of principal component analysis (PCA) and confirmatory factor analysis (CFA). Factor analysis is a technique that reduces voluminous data matrices into a small number of inter-correlated item "packages" that may be interpreted as traits or "factors" explaining the observed co-variance. Factor analytic studies are highly dependent on the input (e. g., the selection of items) as well as on the interpretability of the output (the underlying traits) which may reflect, to some extent, subjective judgement.

The literature pertaining to factor analytic studies of schizophrenia mirrors the uncertainty which surrounds the classification of symptoms into their superordinate groups. Numerous different factor structures have been proposed. It has been proposed that three major factors account for the variability of schizophrenic phenomenology (Andreasen, 1995; Liddle, Carpenter & Crow, 1994). In a review of factor analytic studies, Andreasen, Arndt, Alliger, Miller & Flaum (1995) concluded that 14 studies have consistently illustrated that schizophrenic symptoms may be best described by a "three-factor structure" of positive, negative and disorganised dimensions of psychopathology. Whether using the same (e. g., Malla, Norman, Williamson, Cortese & Diaz, 1993) or different rating scales (e. g., Johnstone & Frith, 1996; Thompson & Meltzer, 1993) the three-factor structure has been supported. It has been suggested that the replicability of the three-

factor structure makes it a suitable "launching platform for exploring neural correlates." (Andreasen et al., 1995, p. 347).

Critics have pointed out that the three-factor structure may have evolved as a predictable result of using rating scales with item content restricted to the core schizophrenic symptoms (White, Harvey, Opler, Lindenmayer & the PANSS Study Group, 1997) and a limited number of symptoms (Kitamura, Okazaki, Fujinawa, Takayanagi & Kasahara, 1998). Most of the "three-factor" studies have used items from the Scale for the Assessment of Negative Symptoms (SANS; Andreasen & Olsen, 1982) and the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen & Olsen, 1982) as input. These scales contain selective excerpts from the range of schizophrenic psychopathology.

Despite the consistency of the three-factor model, discrepancies still exist among factor analytic studies concerning the optimum factor structure, leading to claims for four, five or even six underlying symptom dimensions, including:

a) depression (Kay & Sevy, 1990; Lindenmayer, Grochowski & Hyman, 1995; White et al., 1997);
b) excitement (Kay & Sevy, 1990; Lindenmayer et al., 1995; Salokangas, 1997;White et al., 1997);
c) pre-morbid social impairment (Lenzenweger & Dworkin, 1996);
d) relational dysfunction (Peralta, Cuesta & de Leon, 1994), neurosis (Rey et al., 1994); and
e) cognitive (Lindenmayer et al., 1995).

Studies that have focused on the factor structure of positive symptoms tend to confirm the presence of FRS. Kitamura et al. (1998) conducted a factor analytic study of 35 different positive symptoms of in-patients (N = 429) diagnosed with ICD-10 schizophrenia. He found six factors, which were:

a) "loose ego boundary" (Schneider's FRS and two symptoms specific to auditory hallucinations);
b) catatonic (catatonic symptoms and incoherence);
c) hypochondriacal (bodily delusions/hallucinations);
d) paranoid (delusions of persecution and reference);
e) grandiose (grandiose and religious delusions); and
f) visual hallucinatory (visual and miscellaneous hallucinations).

The "loose ego boundary" factor had a high loading for Schneider's FRS that accentuates their importance as markers in the diagnosis of schizophrenia.

Cardno et al. (1996) conducted a factor analysis of 21 psychotic symptoms that were identified by the Operational Criteria for Psychosis (OPCRIT; McGuffin et al., 1991) checklist (excluding five symptoms that were rated in less than 10%). In addition to supporting the stability of the three-factor structure of positive, negative and disorganised dimensions, they found that the positive factor segregated into three dimensions of paranoid delusions, first rank delusions and first rank hallucinations. Divisions of the positive factor have also been proposed by others (e. g., Jorgensen & Parnas, 1990; Liddle, 1987; Minas, Klimidis, Stuart, Copolov & Singh, 1994; Stuart, Malone, Currie, Klimidis & Minas, 1995).

These findings (Kitamura et al., 1998; Cardno et al., 1996) are consistent with results from other studies which indicate a high loading of Schneider's FRS on the factors of:

a) "reality distortion" (Liddle,1987);

b) "bizarre delusions" (delusions of being controlled and "mind reading", thought broadcasting, thought insertion and thought withdrawal), and "auditory hallucinations" (voices conversing and voices commenting) as suggested by Toomey et al. (1997); and

c) "ego disorder" (thought withdrawal, thought insertion, thought broadcasting and passivity experience) and auditory hallucinations (Kitamura et al., 1998).

Despite the consistency of the three factorial psychopathological domains of schizophrenia, the specificity of the structure remains doubtful (Jablensky, 1999). Using only nine items from the SAPS and SANS, the three factors could be found in primary mood disorders, schizoaffective disorders and schizophrenia (Ratakonda, Gorman, Yale & Amador, 1998), with substantially higher severity and prevalence in the latter patient group. This lends support to the grouping of psychopathology into domains, not restricted to diagnostic criteria, which divide the symptoms of each patient into groups.

Considering the different patient cohorts used in factor analytical studies and the limitations of factor analysis (see Nunally, 1978; Tabachnick & Fidell, 1996), the number of "true" dimensions underpinning the phenomenology of schizophrenia remains uncertain.

Frequency of symptoms

The WHO ten-country study on schizophrenia (Jablensky et al., 1992) examined the frequency of 44 psychotic and affective symptoms (from the Present State Examination (PSE), Wing, Cooper & Sartorius, 1974) in 1288 individuals with schizophrenia. By using the PSE's computerised CATEGO algorithm for diagnostic classification, they found similar results for patients in developing countries compared with developed countries. Overall, 56% of the patients were defined as "nuclear schizophrenics" (CATEGO class S+) characterised by one or more of Schneider's FRS. As these patients had high scores on all 'positive psychotic' symptoms, Jablensky et al. (1992) suggest that FRS "can be regarded as an index of severity of 'positive' psychotic disturbances in schizophrenic patients." (p. 86).

Similarly, in the International Pilot Study of Schizophrenia (IPSS; WHO, 1974) patients with FRS (e. g., auditory hallucinations, thought broadcasting, thought insertion, thought withdrawal and delusions of control) had a high probability (between 0.93 and 0.97) of being diagnosed with schizophrenia or paranoid psychosis.

1.2 First Rank Symptoms (FRS)

1.2-1 The origin of the concept of FRS

FRS were first proposed as diagnostic "markers" by Kurt Schneider in the 1930's and represented an important step forward in the delineation of schizophrenia. In later publications, Schneider (1959) insisted that, if present, FRS "must have undisputed precedence" in the clinical diagnosis of schizophrenia (p. 135), although a diagnosis of schizophrenia can be made without the presence of FRS. He stated that FRS may also occur in psychotic states associated with organic brain disease. Notably, Schneider never referred to FRS as "pathognomonic" as claimed by others (e. g., Andreasen & Flaum, 1994).

Against the background of marked variability in symptomatology in schizophrenia, Schneider's (1959) symptoms are relatively stable and reliable forms of "positive symptoms". Schneider derived FRS empirically from clinical observation rather than from a theoretical perspective, advocating the need for an initial "unbiased clinical observation and description of symptoms" (p. 88), which should be "continually measured and tested" (p. 115). Spitzer (1992) stated that Schneider was influenced by Karl Jaspers' emphasis on the need for criteria to link clinical judgement to the patient's subjective experience. This underscores the need for a standardised self-administered instrument for eliciting and rating FRS.

1.2-2 Defining FRS

FRS are thought to represent primary psychopathological symptoms in the sense that they are not reducible to other phenomena. They include:

a) the subjectively experienced thought disorder (own thoughts spoken aloud; thought echo, thought insertion, thought broadcast, thought block and thought withdrawal) and the experience of replacement of will (loss of the subjective sense of "ownership" over one's voice, handwriting, action and thoughts);
b) specific forms of hallucination ("voices" commenting on one's thoughts and "voices" discussing the subject in third person); and
c) delusional percept (a sense of altered meaning of otherwise ordinary perceptions).

Detailed definitions of these symptoms are available in the glossary accompanying the SCAN (see Appendix A). Mellor (1970) and Koehler (1979) have also provided definitions that are modifications of Schneider's (1959) FRS. These alternative definitions are not used in the present study, which is "anchored" in the concepts underlying the SCAN, an international assessment instrument used widely.

1.2-3 FRS in ICD-10 and DSM-IV

In the move, since the 1970's, toward operationalising diagnostic criteria for psychiatric research, Schneider's (1959) FRS have played a prominent part in the definition of schizophrenia. The identification of FRS is a major part of structured

interviews such as the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978) and the Present State Examination (PSE; Wing et al., 1974). The latter was developed for the IPSS (WHO, 1974) and incorporated into the SCAN.

FRS have become an integral part of widely used diagnostic classification systems such as the ICD-10, DSM-IV and RDC. Albeit in different ways, these classification systems focus on the presence of FRS as a basis for diagnosing schizophrenia. Compared with DSM-IV, ICD-10 places more weight on individual FRS. The required minimum duration of active symptoms (including FRS) in the ICD-10 is one month compared with 6 months of continuous symptoms (of any kind) in addition to one month of active symptoms in the DSM-IV.

DSM-IV and ICD-10 reflect somewhat different views regarding FRS promoted by different schools of thought in different parts of the world. Although both classification systems are extensively researched and based on the same principles, a number of conceptual issues concerning the diagnostic criteria for schizophrenia remain on the agenda for future research (Jablensky, 1993).

1.2-4 Research into FRS

Notwithstanding the operational importance of FRS (Andreasen & Carpenter, 1993), the literature highlights a lack of consensus concerning their definition, frequency and predictive value (Andreasen & Flaum, 1994; Carpenter et al., 1996; Crichton, 1996; David & Appleby, 1992; Koehler, 1979). This variability among

studies may be due to methodological inconsistencies concerning the measurement of FRS. However, despite criticism over the past decade concerning their specificity, reliability, base rate and prognostic significance (Andreasen & Flaum, 1994; Crichton, 1996), the concept of FRS is still widely used.

Prevalence

Early studies using standardised interviews reported that between 51% and 95% of patient samples diagnosed with schizophrenia had experienced at least one FRS (Carpenter & Strauss, 1974; Carpenter, Strauss & Muleh, 1973; Mellor, 1970; Wing & Nixon, 1975). Other studies using case records (Abrams & Taylor, 1973; Huber, 1967, cited in Koehler, Guth & Grimm, 1977; Taylor, 1972) reported an overall prevalence rate of FRS in schizophrenics ranging from 28% to 72%.

As pointed out, FRS may not be specific to schizophrenia or even to psychotic disorders. It has been estimated that FRS occur in 12% to 23% of manic patients (Carpenter & Strauss, 1974; Taylor & Abrams, 1973), 16 % of depressive patients (Carpenter & Strauss, 1974), 23% of affective psychosis and 9% of the neurotic and character disorders (Carpenter et al., 1973).

Based on *narrowly* defined FRS, Geddes, Christofi and Sackett (1996) claimed a likelihood ratio of around 30% for schizophrenia as diagnosed by the RDC. They argue that patients who have a 30% to 50% a priori probability of suffering from schizophrenia (e. g., a psychiatric in-patient) and who score positively for FRS, will have a 85% to 95% chance of meeting the RDC for schizophrenia. In populations with a lower a priori risk of suffering from a diagnosis of RDC

schizophrenia (e. g., 5% to 10%), individual patients who score positively on FRS will still have a 65% to 75% chance of meeting the RDC for schizophrenia.

Until recently, no data was present on the occurrence of FRS in non-clinical samples, that is, in individuals not meeting the criteria for any psychiatric disorder. By using a self-report questionnaire, Verdoux et al. (1998) found that between 5% and 70% of subjects with no psychiatric history (n = 348) reported delusional ideations (including alien thoughts, thought broadcasting, thought echo and replacement of will) and 16% endorsed having experienced verbal hallucinations. Similarly, by using a structured interview, van Os, Bijl and Ravelli (1999) have reported that clinical symptoms resembling those of psychosis can be elicited from 10.4% of the general population.

Reliability of assessment

The discrepancies in the reported prevalence rates of FRS may reflect the lack of consensus on the criteria and the method of detecting FRS (Radhakrishnan, Mathew, Richard & Verghese,1983). Most of the discrepancies seem to be related to how narrowly the FRS were defined (O'Grady, 1990). In order to establish whether the FRS can be used as a valid indicator of schizophrenia, Koehler (1979) asserted that the definitions of FRS need to be operationalised by using "narrow" criteria. He pointed out that many researchers (e. g., Fish, 1969, cited in Koehler, 1979; Mellor, 1970; Taylor & Heiser, 1971; Wing et al., 1974) had used rather wide definitions which might have resulted in inflated estimates of their frequency.

Although more recent studies have overcome some of the above methodological flaws by using structured clinical interviews, the presence or absence of FRS is still estimated using a wide range of methods of assessment. By employing the Schedule for Affective Disorders and Schizophrenia (SADS, Endicott & Spitzer, 1978) for example, the presence of FRS was reported in 60% of 294 individuals diagnosed with schizophrenia (Tandon & Greden, 1987), compared with 5% among patients diagnosed with a major depressive disorder. This study also found that the specificity of FRS for schizophrenia was 97%, and the sensitivity was 70% with a positive predictive value (PPV) of 90%.

According to O'Grady (1990), in a sample of 109 individuals with mixed diagnoses, 73% of the new admissions diagnosed with schizophrenia had FRS compared with only 7% of individuals having an affective disorder. By using the SADS to provide the RDC and a FRS questionnaire of Koehler's (1979) definitions, this study suggested that the specificity of FRS for schizophrenia increased when employing a narrow versus wider definition of symptoms. A number of other studies have used checklists of Schneider's (1959) FRS and case records have been rated against brief definitions (e. g., Abrams & Taylor, 1973; Bland & Orn, 1980; Koehler et al., 1977; Taylor, 1972).

Stability

Mellor, Sims and Cope (1981) indicated an 88% temporal stability of a diagnosis of schizophrenia made on the basis of FRS over an average follow-up period of five years. This result was based on a narrow definition and lends support

to the suggestion that a narrow concept of FRS will be more consistent with a higher diagnostic specificity for schizophrenia.

Cross-cultural variability

Considerable cross-cultural variability has also been found in the prevalence of FRS. The IPSS (WHO, 1974) and the WHO ten-country study (Jablensky et al., 1992) indicate that the prevalence of FRS in patients diagnosed with schizophrenia, according to the ICD classification system, ranged between 38% in a rural area in India and 84% in Nigeria. Other studies have shown that the prevalence of FRS varies from 72% to 76% in English schizophrenic patients (Carpenter & Strauss, 1974; Mellor, 1970) to 67% in Pakistan (Malik, Ahmed, Bashir & Choudhry, 1990), 56.5% in Saudi Arabia (Zarouk, 1978), 35% in India (Radhakrishnan et al., 1983), 25% in Sri Lanka (Chandrasena, 1987), and among immigrant groups to England: Afro-Caribbeans and Jamaicans (43%), Asians (33%), and Africans (31%) (Nketei & Vadher, 1984). Again, these differences may be due to the use of different diagnostic criteria and different methods of eliciting the FRS. The studies also vary in the symptom duration, definition and the number of FRS considered.

1.2-5 Do FRS develop from BS?

In the 98-item Bonn Scale for Assessment of Basic Symptoms (BSABS; Gross, Huber, Klosterkötter & Linz, 1987) the BS are divided into five main categories of subjectively experienced deficiencies. These include:

a) *direct deficiency symptoms or direct dynamic deficiencies* (complaints of increased physical and mental exhaustibility, fatigability, decreased energy, resilience and perseverance);

b) *indirect deficiency symptoms or indirect dynamic deficiencies* (complaints of decreased psychic tolerance to stress when working, unexpected demands, time pressure and emotionally charged events, increased impressionability, obsessions, depersonalisation and phobia);

c) *cognitive thought* (disturbances of thought processes, concentration, receptive and expressive speech, immediate recall, short term and long term memory), *perception* (disturbances such as blurred vision, sensitive to light and noises and changes in perception) and *motor deficiencies* (disturbances of motor interference, motor blockades and loss of automatic abilities);

d) *cenesthesias* (complaints of sensations of numbness or stiffness, pain, migrating, electric, thermic, abnormal heaviness or weightlessness, vestibular, kinaesthetic illusions, dysesthetic crises and sensations of diminution, shrinking, constriction enlargement and extension) and;

e) *autonomic symptoms* (pupillary abnormalities, hyperhidrosis, vasomotor disturbances, nycturia and polyuria, paroxysmal tachycardia and systolic hypertension).

According to Gross & Huber (1996), the BS represent the primary deficiencies of schizophrenia in the sense that they form the basis on which the complex fluctuating FRS grow. It is plausible that BS are mild-degree FRS, or initial precursors on a continuum with FRS. The BS have been described as a "psychopathological continuum" ranging from "uncharacteristic" symptoms (level- one) to more "characteristic" symptoms (level-two) which form the basis of level-three, referred to as the "typical schizophrenic 'end phenomena'" (Gross & Huber, 1985), and include FRS.

It is has been further suggested that distinct level-two BS can progress into FRS, and schizophrenic psychosis. This proposition is supported by the "Bonn transition sequences" study (Klosterkötter, 1992) which indicated that the FRS evolve from BS according to a certain pattern (deficiencies of perception, thinking, speech, memory, cognitive control of actions and proprioception).

The Bonn study systematically followed up 502 patients with schizophrenia between 1967 and 1973, who had been admitted to the University Psychiatric Clinic in Bonn between 1945 and 1959 (Huber, Gross, Schüttler & Linz, 1980). After an average duration of illness of 22.4 years (4.4 psychotic episodes lasting on average 14 months), the study showed that 22% of the patients had a complete remission. Thirty-five percent had developed "characteristic schizophrenic deficiency

syndromes" and 43% had the so-called "uncharacteristic" remission or "pure defect state", characterised by BS deficiencies only, without positive psychotic symptoms.

Furthermore, prodromes and "outpost" syndromes were found in 35% and 15% of the Bonn sample, respectively. These syndromes were defined as precursors "characterising the true onset of schizophrenia" (Gross & Huber, 1996, p. 97). These include primarily uncharacteristic BS such as dynamic and cenesthetic complaints with vegetative disturbances and asthenic or depressive deficiencies. The prodromes were found to progress into the first psychotic manifestation (level-two BS) after an average of 3.2 years (ranging from two months to 18 years). The outpost syndromes remitted after five months without transition into a psychotic episode, and preceded the prodromes or the first psychotic episode by an average of 10.2 years (ranging from four days to four years). The interval between the earliest outpost syndromes and the onset of the first psychotic episode could be as long as 35 years.

Gross and Huber (1996) argue that the precursor syndromes occur frequently, but go unrecognised as markers of vulnerability for schizophrenia. This is in accordance with the early recognition studies (Gross, Huber & Klosterkötter, 1992; Klosterkötter, Schultze-Lutter, Gross, Huber & Steinmeyer, 1997), which indicated that BS occurred in 77% of patients at index examination (Klosterkötter et al., 1997).

1.3 Basic Symptoms (BS)

1.3-1 The origin and nature of the concept of BS

Influenced by Jaspers' and Schneider's descriptive phenomenology, Huber developed the concept of BS to capture the subjective experience of a hypothesised disorder of information processing in the limbic system that may be "close to the substrate" of the schizophrenic process (Huber & Gross, 1989). The individual self-experienced BS were gradually delineated by long-term follow-up studies of untreated schizophrenic patients. Like the FRS, BS were derived empirically from clinical observations rather than from a theoretical construct. Thus, Huber and colleagues expanded the idea of subjective experiences and phenomenology to cover an even broader range of symptomatology of schizophrenia (Huber et al., 1980).

Huber's concept of BS, largely ignored in the English literature (Peralta, Cuesta & de Leon, 1992), is less well known than FRS. BS are not explored in detail by psychiatrists, and perhaps not even recognised or evaluated (Gross, 1997). The reason for this may be in the tradition that observable behaviours and signs have long played a prominent role in clinical assessment, while the subtle subjective phenomena which individuals may exhibit are not explored and remain undetected.

BS should not be confused with the negative symptoms as described in modern operationalised classification systems. It has been pointed out that "Negative symptoms overlap but are not equivalent to...Huber's basic symptoms."

(de Leon, Wilson & Simpson, 1991, p. 278; Gross, 1997). The fundamental difference is that the prodromal and residual symptoms as defined in DSM-III-R are abnormal behaviour symptoms and expressions that are commonly observable, whereas BS are experiential in nature and not easily recognisable in behaviour and expression (Gross, 1997). These "deficiencies" are typically recognised and distinguished by patients in the pre-psychotic basic stages (prior to the onset of the prodromal symptoms) who still have preserved insight, reality, ego boundaries and ability to perceive their deficiencies (Gross et al., 1992). Therefore, a thorough assessment must include patients' self-perception in order to detect BS or early symptoms that may be characteristic of schizophrenia.

Gross and Huber (1985) stressed that early recognition of BS is significant in rehabilitation of schizophrenic patients. If detected, individuals can develop coping strategies to combat the disease, and remain compensated in a favourable environment. It has also been suggested that early intervention in the prodromal precursor stages of schizophrenia can prevent the exacerbation of positive psychotic symptoms.

This fortifies the significance of a self-report symptom screening instrument in primary prevention, and initially inspired the development of the FCQ (Süllwold, 1977) and the BSABS (Gross et al., 1987).

1.3-2 Assessment and measurement

Bonn Scale for Assessment of Basic Symptoms (BSABS)

In the BSABS, the practitioner rates the patient's complaints and experiences in an interview format as related by the patient. The inter-rater reliability of the BSABS is reported to be satisfactory (Klosterkötter, Ebel, Schultze-Lutter & Steinmeyer, 1996), however, information concerning its reliability and validity is scarce in the English literature (de Leon et al., 1991).

The Frankfurt Complaint Questionnaire (FCQ)

Based on Huber's BS concept, Süllwold (1977) developed the FCQ. This is a 98 item, yes-no format, self-report questionnaire that assesses subjective experiences of psychotic patients. Like the BSABS, the FCQ items have been derived from, and include, "verbal complaints" of schizophrenic patients.

The FCQ is widely used in Europe (Cuesta, Peralta & Irigoyen, 1996; Mass, Weigel, Schneider & Klepsch, 1998) and has been translated into several languages. The scale is divided into ten sub-scales (loss of control in thoughts and actions, simple perception, complex perception, language, thought, memory, motility, loss of automatism, anhedonia-anxiety and sensorial over-stimulation). Furthermore, the FCQ has a homogeneous four-factor structure derived from a German sample of 463 schizophrenic patients (Süllwold, 1986, cited in Cuesta et al., 1996). The factors

are: central cognitive disturbances, perception and motility, depressivity and internal and external over-stimulation. Together, the four factors explained 72% of the variance. Cuesta et al. attempted unsuccessfully to replicate this factor structure with 270 Spanish mixed psychotic patients. In addition, an internal reliability of .97 coefficient alpha was obtained for the FCQ and supported by Cuesta et al

Recently, Mass et al. (1998) have argued that only some of the BS of the FCQ are highly specific to schizophrenia. They found that items mostly related to cognitive deficiencies in thought, perception and psychomotor behaviour (11, 14, 15, 63, 81, 90 93, 94; as per the original FCQ numbering in Appendix B) were more specific for schizophrenia compared with other items. Apart from this, no other studies appear to provide any information on the psychometric properties of the FCQ.

Criticism of the FCQ has pointed out that the questionnaire is lengthy and includes statements that are difficult to understand. Attempts have been made to reduce the items to 18 (Cuesta et al., 1996) or 20 (Wiedl & Schöttner, 1991). Other scales have been developed to measure subjective experiences, but they do not directly match Huber's concept of BS (e. g., Subjective Experience of Deficit Scale (SEDS; Liddle & Barnes, 1988); Interview on Subjective Experience (ISE; Cutting & Dunne, 1989); and the Subjective Deficit Syndrome Scale (SDSS; Bitter, Jaeger, Agdeppa & Volavka, 1989)). Nevertheless, the BSABS and the FCQ are clearly based on Huber's concept of BS and the instrument developed in this paper is partly based on this model.

1.3-3 Research into BS

Prevalence of BS

In spite of criticism concerning a lack of specificity for schizophrenia, certain sub-syndromes of the BSABS have been identified using cluster analysis. Namely, "information processing disturbances" and "interpersonal irritation" have been found to "...reach a degree of specificity for schizophrenia close to or even the same as the positive symptoms which are typical for schizophrenic disorders." (Klosterkötter, et al., 1996, p. 153). Overall, Klosterkötter et al. found that BS are significantly more frequent in schizophrenic and organic mental disorders compared with affective disorders. They also indicated that BS occurred significantly more often in affective disorders compared with neurotic, personality, substance-induced disorders or with the psychologically healthy group.

Moreover, Klosterkötter et al. (1996) found that cluster one, or "information processing disturbances" (associated with cognitive disturbances in thought, perception (mostly visual) and psychomotor behaviour), discriminated schizophrenic and organic mental disorders significantly from the other diagnostic groups. This was also the case for the second cluster (cenesthesias), whereas the third cluster (stressor sensitivity and reduced psychological stress tolerance) occurred nearly as often in affective disorders. The fourth cluster, termed "adynamia" (disturbances of affect and contact, retardation and impediment of thought processes), occurred slightly more frequently in affective compared with schizophrenic disorders. The

fifth cluster, "interpersonal irritation" (disturbances of affect and contact, stressor-sensitivity and thought disturbances), was found significantly more frequently in schizophrenia compared with any other group. The latter cluster was also significantly more frequent in patients with organic mental or affective disorders compared with substance-induced disorders or psychologically healthy individuals.

Furthermore, subjective cognitive deficiencies were the most frequently reported BS in the Bonn study (67% of the patients with prodromes, 69% of the patients with pure defect syndrome and 78% of the patients with post-psychotic reversible basic stages) (Huber et al., 1980). These deficiencies were divided into 13 sub-categories in the BSABS and ranked in a descending order of frequency. Based upon Schneider's criteria, FRS were evident in 77% of patients.

Although not exclusive to schizophrenia (Huber & Gross, 1989), the prevalence of BS is high in schizophrenic patients (Huber, 1966, cited in Huber & Gross, 1989; Liddle & Barnes, 1988). BS have also been found in schizoaffective psychoses and organic brain diseases, but not in healthy controls, neurotic disorders and personality disorders (Huber & Gross, 1989). However, other authors have reported that BS do occur in non-psychotic disorders (Klosterkötter et al., 1996; Peralta & Cuesta, 1991, 1994).

Using the BSABS and Schneider's critieria for diagnosing schizophrenia and cyclothymia (affective psychoses), Ebel, Gross, Klosterkötter and Huber (1989) found that specific BS were significantly more frequent in schizophrenia than in affective psychoses. These included: a) interference of thought (73%, 30%), b) pressure of thought (63%, 10%), c) subjective blocking of thought (70%, 40%), d)

disturbance of long term memory (50%, 13%), e) disturbances of revisualization (30%, 7%), and f) tendency to delusion of reference (57%, 20%), respectively.

Of the perceptual disturbances, 53% of the schizophrenic patients compared with 3% of the depressed patients reported "other" visual perceptual disturbances. Schizophrenic patients also reported significantly more often than depressed patients to suffer from: a) sensitivity to light (53%, 23%), b) blurred vision (53%, 13%), c) sensitivity to noises (77%, 50%), d) changes in intensity or quality of auditory perception (43%, 7%), e) aroused state of perceptual awareness (47%, 17%), f) disturbance of perception of continuity of own acts (27%, 7%), and g) derealization (33%, 7%) (Ebel et al., 1989).

Although cognitive motor disturbances, such as motor interference and blockages and psychomotor retardation and disturbances of psychomotor organisation of speech predominated in schizophrenic patients compared with depressed patients the results were not significant in Ebel et al.'s (1989) study. However, self-experienced disturbances of movement was only evident in schizophrenic patients. Cenesthesias were typically found significantly more often in individuals diagnosed with schizophrenia (47%) compared with depressed patients (23%). Somatopsychic depersonalization and kinesthetic sensations were reported significantly more often by schizophrenic patients (33%, 20%) compared with individuals diagnosed with depression (7%, nil). Dysesthesias and paroxysmal were more frequently found in schizophrenic patients (13%, 40%) compared with depressed patients (nil, 17%).

Huber's characteristic BS are common in individuals with acute schizophrenia (Cutting & Dunne, 1989; Jaeger, Bitter, Czobor, Volavka, 1990), and have been associated with positive schizophrenic symptoms (Liddle & Barnes, 1988; Jaeger et al., 1990) rather than negative symptoms (Andreasen & Olsen, 1982; Liddle & Barnes, 1988; Jaeger et al., 1990). In a similar vein, Peralta and Cuesta (1991, 1992) concluded that BS are significantly related to Schneider's FRS.

Predictive value

Huber's long term follow-up studies provide rich predictive information. Gross et al. (1992) conducted a prospective follow-up study of 338 patients diagnosed at their first episode with DSM-III-R somatoform, dysthymic, anxiety and personality disorders. They found that after an average of 7 years, 31% had made a transition from "probable" schizophrenia to "first rank" schizophrenia and 27% to "second rank" schizophrenia. Additionally, 42% of the 96 patients at follow-up showed no transition into psychosis. The follow-up results indicated significantly more distinct cognitive basic deficiencies in thought, perception and psychomotor behaviour at index examination in the patients who made a transition into psychosis.

The most frequent BS were: thought interference, pressure of thought, thought blocking, disturbances of receptive speech and expressive speech, photopsias, partial seeing, hypervigilance, derealization and impairment of automatic

skills. Based on these findings, Gross et al. (1992) suggest that these BS can be seen as predictors of impending transition into a florid psychotic illness and could be present as a precursor or risk state for years prior to the development of schizophrenia.

The proposition that early BS are "psychopathological vulnerability markers" for later schizophrenia has more recently found support in an 8 year follow-up study. Of a total of 96 patients with various DSM-III-R non-psychotic diagnoses, 58% of patients with firm evidence of BS at initial examination later developed a psychotic disorder in the catamnestic period (Klosterkötter et al., 1997). Based on the BS detected at index investigation of non-schizophrenic patients, Klosterkötter et al. (1997) concluded that schizophrenic psychoses could be predicted with a specificity of .45, resulting in 23% false positives for schizophrenia. However, the study showed a sensitivity level of 1.0 and a positive predictive value of .77. In accordance with previous findings (Gross et al., 1992; Klosterkötter, 1992), BS mainly related to cognitive disturbances of thought, perception and psychomotor behaviour were predictive of later schizophrenia.

1.4 Self-report methodological issues

There are inherent limits of the self-report mode (for example, inherent psychometric limits, similar patients may interpret questions differently and patients may make an effort to create false impression). Furthermore, it has been argued that

individuals with schizophrenia may not have the ability to accurately report their symptoms (e. g., Atkinson et al., 1997). Reasons include: perceptual distortions, impaired insight (e. g., Amador et al., 1994; David et al., 1995; McEvoy et al., 1996), information processing deficits (diminished concentration, attention, memory, abstraction and concept formation), denial, shame and lack of trust (Hamera et al., 1996).

These limitations pose a challenge to the development and validation of any clinical instrument for use with schizophrenic patients and every effort should be made to reduce measurement bias and error (Pavot & Diener, 1993). Likewise, it is imperative that practitioners and researchers use tools that are psychometrically sound. Moreover, a self-report instrument is a tool used as part of a multi-dimensional approach, and is more reliable if used in conjunction with clinical acumen and objective measures (Liddle & Barnes, 1988).

Despite detailed criticism of psychiatric patients' self-report reliability (Atkinson et al., 1997), it has recently been shown that patients with schizophrenia are able to accurately report their subjective experiences, including positive symptoms (Hamera et al., 1996). This has also been reported by others (e. g., Cutting & Dunne, 1989; Jaeger et al., 1990) and recently supported by Voruganti, Heslegrave, Awad and Seeman (1998). They assert that clinically compliant and stable schizophrenic patients taking antipsychotic drugs can reliably and accurately use self-report instruments to evaluate their quality of life. In addition, the self-report judgement of symptoms by patients with severe mental disorders has been

found to be more congruent with the providers' perspective than has their judgement of social aspects (Sainfort, Becker & Diamond, 1996).

Peralta and Cuesta (1992) found that patients with impaired insight reported fewer subjective experiences. It has been postulated that insight may vacillate depending on the phase of the illness (Smith, Hull & Santos, 1998). Based on this, the patients' self-evaluation may be poorer in the phase of florid psychosis and severe depression. However, Voruganti et al. (1998) concluded that the severity of schizophrenic symptoms, cognitive deficits and drugs did not affect the patients' self-report.

There are conflicting findings as to whether impaired insight is associated with positive, negative or disorganised symptoms. For example, positive (Amador et al., 1993) and disorganised symptoms (Dickerson, Boronow, Ringel & Parente, 1996; Kim, Sakamoto, Kamo, Sakamura & Miyaoka, 1997), including severe levels of depression, have been associated with poor insight (Amador et al., 1993). However, the extent to which poor insight might impair self-report in psychotic illnesses in comparison with other ways of eliciting information is still to be concluded.

1.5 The present study

1.5-1 Aim

The major aim of the present study is to develop a reliable instrument to identify the presence of FRS and BS. A number of hypotheses will be considered in the evaluation of the instrument's efficacy.

1.5-2 Objectives

The main objectives of this study are:

1. To develop an item pool for a self-report instrument to assess FRS and BS.
2. To reduce this item pool to form a preliminary self-report instrument through the use of an expert panel of judges.
3. To evaluate the internal consistency of this screening instrument.
4. To assess the sensitivity of the instrument to identify the presence of FRS and BS in patients diagnosed with schizophrenia, "other psychotic" and "non-psychotic" disorders, and healthy controls.
5. To establish the concurrent validity of this instrument with identified items of the Diagnostic Interview for Psychoses (DIP; Commonwealth Department of Health and Family Services [CDHFS], in press).

1.5-3 Hypotheses

This study, unlike previous research, will attempt to investigate the relationship between the presence of FRS and specific psychiatric disorders through the use of a self-report measure. This lead to the first two hypotheses which are:

1. The proportion of the probands reporting FRS will be significantly higher than in the control group.
2. Within the proband group those diagnosed with "psychotic" disorders will report significantly more FRS than those diagnosed *without* a "psychotic" disorder.

Based on previous research, hypotheses 3 to 6 are related to the understanding that FRS and BS may be distributed on a continuum of severity.

3. A significant proportion of both controls and "non-psychotic" patients will report BS. It is predicted that the latter group will report significantly more of these symptoms than the former.
4. It is predicted that the patients diagnosed with schizophrenia will report significantly more BS compared with the "non-psychotic" group.
5. Within the control group, a smaller proportion will report FRS than BS.
6. Within the "non-psychotic" patient group, a smaller proportion will report FRS than BS.
7. Reflecting the earlier discussion of the relationship between FRS and BS, the following clinically based associations are predicted:

a) FRS (such as loud thoughts, thought echo, thought insertion, thought broadcast, thought withdrawal and thought block) will each be significantly correlated with the BS category "other subjective thought disorder";

b) FRS such as "voices commenting" will be significantly correlated with the BS category "other verbal hallucinations"; and

c) FRS such as "will replaced" will be significantly correlated with BS category "control of movements".

CHAPTER 2

Method

2.1 Instrument development

During the current study, the self-report Psychosis Symptom Screening Instrument, from this point referred to as the PSSI, was developed in three stages. The stages were: initial construct development, assessment of item relevance (Davis, 1996; DeVellis, 1991; Lynn, 1986) and a pilot test.

The construct development phase included domain identification, item generation and preliminary instrument construction (Lynn, 1986). In the second phase the content relevance, both by item and item groups (DeVellis, 1991), was evaluated by experts. As part of this phase, "representative" patients were asked to comment on their understanding of the PSSI items. The purpose of this was to eliminate or modify any items that were ambiguous, difficult to read, confusing or incomprehensible to the respondents. As this was a purely qualitative evaluation, no statistical analysis was performed at this stage. The third and final stage comprised a pilot sample used for preliminary assessment of psychometric properties and testing of hypotheses.

2.1-1 Development phase

The components of the PSSI are derived from well established instruments. These include the SCAN glossary operational definitions and the FCQ. Due to their different sources, FRS and BS were addressed separately in the initial development phase and the item relevance quantification phase.

FRS

The operational definitions of the FRS in the SCAN glossary (see Appendix A) were re-written in a closed response format ("yes" and "no") as self-report statements. A pool of questions was drafted with alternative wordings for each symptom. To capture how FRS are subjectively reported by patients, the wording of some items was informed by a review of videotaped SCAN interviews held at the Centre for Clinical Research in Neuropsychiatry.

BS

The BS section of the PSSI is derived from 56 BS statements that were extracted from the FCQ (see ticked items in Appendix B). The English version of the FCQ was available from Scharfetter (1995), who added eight items concerning avoidance reactions. Unfortunately, the source and the method used to translate these items into English were not stated and to my knowledge no literature regarding the psychometric properties appear to be available for this foreign language translation. The current study will provide data on the psychometric properties of specific English translated items that form the BS component of the PSSI.

The BS statements were deemed suitable for inclusion because of their reported high frequency in patients who later develop schizophrenia (Ebel et al., 1989; Huber & Gross, 1989; Mass et al., 1998) and their association with Schneider's FRS (Huber & Gross, 1989; Peralta & Cuesta, 1991, 1992; Peralta et al., 1992). They refer to cognitive deficiencies in thought, perception and psychomotor behaviour and are mainly those classified as Huber's level-two symptoms.

2.1-2 Judgement-quantification phase

The evaluation phase was completed by an expert panel (N = 5) and a small sample (N = 15) of psychiatric in-patients.

Expert panel – preliminary item analysis

FRS

Five psychiatrists agreed to evaluate the content validity of the FRS items. Lynn (1986) suggests that any expert panel should have at least three members. The experts possessed good knowledge of the theoretical aspects of instrument design (Davis, 1996) and clinical expertise in psychiatric phenomenology. Grant and Davis (1997) considered this type of expertise essential for the evaluation of the content relevance.

The experts followed a structured procedure (Grant & Davis, 1997) to evaluate the content validity of *the first draft.* The explanatory covering letter, the rating scales form for content relevance and wording, and the content review

questionnaire, including the definitions of terms, are shown in Appendix C.

Using an "index of content validity" (CVI; Waltz & Bausell, 1981) the experts were instructed to rate each item on a four point ordinal scale addressing: a) the items' operational relevance, and b) whether the content domain adequately measured all dimensions of the construct. Using the same scale, the experts were asked to rate whether the entire item pool was sufficient to represent the total content domain. The experts were invited to provide comments on the conceptual clarity of the items, wording and readability. They were also asked to make suggestions for any other changes, including the addition or deletion of items.

To minimise chance agreement and to check the accuracy of the experts, a small number of incongruent items were inserted (Grant & Davis, 1997). All experts detected these items. Items that attracted an inter-rater agreement of at least 80% (Davis, 1996) and no recommendations for change by the expert panel were considered for inclusion.

Of the 58 FRS items evaluated, a CVI of at least .83 (Lynn, 1986) was obtained for 27 FRS items. The items corresponding to the symptom of delusional perception were excluded altogether, because of poor inter-rater agreement. Items considered redundant by the experts, due to overlap, were also excluded. The CVI for the overall instrument was at this stage .85. When the inter-rater agreement in excess of 80% between experts was applied, 18 FRS items were retained for use in the next draft (see Appendix D).

BS

Due to the fact that the FCQ is a well established and widely used self-report instrument (Cuesta et al., 1996), the evaluation phase for the BS statements did not include a review from the full expert panel. However, prior to the patient sample evaluation, the wording and the content of *the second PSSI draft* (including both FRS and BS) were revised by two Professors in Psychiatry with extensive knowledge of instrument design and clinical expertise in psychiatric phenomenology. Minor changes were made to the wording of some of the items.

Patients – preliminary item evaluation

The *third draft* of the PSSI was then evaluated by psychiatric in-patients. Participants were diagnosed with both "psychotic" and "non-psychotic" disorders, and were recruited from consecutive admissions to the Inner City Mental Health Service at Royal Perth Hospital, Western Australia. Twenty patients were approached and fifteen of them gave consent to evaluate the items.

Following written voluntary informed consent, the patients filled in the PSSI in the presence of the researcher. After completion, each item was discussed independently with each patient and an evaluation form was completed by the patient (as shown in Appendix E). Factors affecting the validity of the patients' responses, such as their inability to answer or understand the wording of any items were noted and discussed. As a result, some 15 items and the instrument's

instructions were modified and incorporated into *a fourth and final draft* (see Appendix F). This is the version referred to as the PSSI.

Of the 15 patients, 10 were able to fill in the PSSI without difficulty. These included 6 with depression and 4 with psychosis. They provided feedback regarding clarity of instructions, item readability and comprehension. Items that were particularly difficult were identified. These patients had difficulty with the response categories, which at this stage were divided into a) "never", b) "has happened to me in the past, but not in the past six weeks", c) "has happened to me in the past six weeks", and d) "I do not understand the question". More specifically, they had difficulty deciding on the time period and found it hard to distinguish between b) and c) above.

The remaining 5 patients included 2 with acute psychotic illness and 3 with severe depressive symptomatology. One patient from each of these groups was unable to complete the PSSI, while the remaining three patients were able to do so. However, they had difficulty attending to the task and were easily distracted. The two more acutely psychotic patients were unable to discuss their responses, whereas the severely depressed patients were able to provide feedback that reflected their tendency to change their response upon questioning. Due to the variability of responses between the stable and unstable patients, acutely psychotic patients were not included in any further testing.

2.1-3 Description of the final Psychosis Symptom Screening Instrument (PSSI)

The final revised version of the PSSI comprised an 84 item self-report instrument. It includes 18 FRS (see Appendix D), 56 BS (see Appendix B), one control statement related to auditory hallucinations (item 75), one qualitative statement (item 76) and eight statements pertaining to the subjects' reaction to the symptoms (items 77 - 84). The control statement is not considered a symptom and was intended to describe a common experience in the normal population. The qualitative statement was included to provide the respondents with an opportunity to indicate any other difficulties that they experienced, but were not covered by the instrument.

The order of the items was randomised and instructions were written. A four-point numerical response format was selected for recording the presence or absence of particular symptoms. Ranging from zero to three, the responses were categorised as: "no", "yes", "unsure", and "I do not understand the wording of this statement". A "yes" and "no" response method was considered appropriate due to the categorical format of the statements. Although the "unsure" response is not commonly used in a categorical format, it was included to avoid a binary forced choice for respondents who were truly uncertain and to measure the likelihood of error introduced into the responses (Streiner & Norman, 1996). The latter response was considered important during the development phase of the instrument and preliminary application.

2.1-4 The pilot study

Participants

The participants were recruited from unselected consecutive admissions to the in-patient ward and the out-patient Living Skills Centre of the Inner City Mental Health Services at Royal Perth Hospital, Western Australia. The Living Skills Centre provides rehabilitation for individuals with a functional disability as a result of a severe and chronic mental illness, especially psychotic or affective disorders.

The OPCRIT diagnostic algorithm produces a "polydiagnostic" classification of cases according to DSM-III-R, ICD-10 and RDC. In this study, the ICD-10 was used as the standard set of diagnostic criteria, and the diagnoses were grouped into schizophrenia ($n = 23$), "other psychotic" ($n = 12$) and "non-psychotic" disorders ($n = 16$). The schizophrenia group included paranoid schizophrenia, undifferentiated schizophrenia and schizo-affective disorder (depressive type). The "other-psychotic" group comprised delusional disorder, other non-organic disorder, bipolar affective disorder and severe depression with psychosis. Finally, the "non-psychotic" group included mania without psychotic symptoms, mild depression, moderate depression and severe depression without psychotic symptoms. In order to make comparisons between "psychotic" and "non-psychotic" patients, individuals diagnosed with schizophrenia and "other psychotic" disorders were combined into a fourth group termed "psychotic". Table 1 indicates the numbers within each group. This Table also illustrates the diagnostic differences according to

the three independent classification systems. Demographic details of the sample are shown in Table 2. Twenty-four participants were in-patients and 26 participants were out-patients. Further clinical characteristics of the patient sample are shown in Table 3.

Individuals with suspected or confirmed organic disorders, mental retardation (IQ under 70), language and communication difficulties, florid psychosis or acute symptomatology were not approached for inclusion in the study.

Healthy control subjects

Fifty healthy control subjects were recruited from the Royal Perth Hospital Risk Management Department's data base for Staff Accident and Incident Report forms and the Workers' Compensation register. Individuals who were currently seeing a doctor for a psychiatric problem or had a reported psychiatric history were excluded. Demographic details are shown in Table 2.

Table 1
OPCRIT diagnostic classifications of probands (n = 51) diagnosed according to three independent classification systems: ICD-10, DSM-III-R and RDC

Group	n	ICD-10	DSM-III-R	RDC
Schizophrenia (n = 23)				
	13	F20.0	295	Schizoaffective, depressive
	6	F20.0	295	Narrow schizophrenia
	2	F20.0	295	Schizoaffective, bipolar
	1	F20.3	295	Schizoaffective, depressive
	1	F25.1	295.70	Schizoaffective, depressive
Other psychotic disorders (n = 12)				
	1	F22	297.10	Broad schizophrenia
	3	F28	295.70	Schizoaffective, depressive
	6	F31	296.4x	Bipolar disorder
	2	F32.3	295.70	Schizoaffective, depressive
Non-psychotic disorders (n = 16)	2	F30.1	Mania	Bipolar disorder
	1	F32.0	No diagnosis	Major depression
	1	F32.0	No diagnosis	Major depression
	8	F32.1	296	Major depression
	4	F32.2	296	Major depression

Note. F20.0 = Paranoid schizophrenia, F20.3 = Undifferentiated schizophrenia, F25.1 = Schizoaffective disorder, depressive type, F22 = Delusional disorder, F28 = Other non-organic disorder, F31 = Bipolar affective disorder, F32.3 = Severe depression with psychosis, F30.1 = Mania without psychotic symptoms, F32.0 = Mild depressive episode, F32.1 = Moderate depressive episode, F32.2 = Severe depressive episode without psychotic symptoms.
295 = Schizophrenia, 295.70 = Schizoaffective depressed, 297.10 = Delusional disorder, 296.4x = Bipolar disorder, 296 = Major depression.

Table 2
Demographics of psychotic and non-psychotic patients and normal healthy control subjects

Demographics	Psychotic and non-psychotic patients (n = 51)[a]		Healthy controls (n = 50)[b]	
	n	(%)	n	(%)
Gender:				
Female	23	(45.1)	40	(80.0)
Male	28	(54.9)	10	(20.0)
Marital status:				
Married	26	(51.0)	41	(82.0)
Single	25	(49.0)	9	(18.0)
Education:				
Secondary (Y 8-12)	35	(68.6)	35	(70.0)
Tertiary	8	(15.7)	12	(24.0)
Apprenticeship	4	(7.8)	1	(2.0)
College	3	(5.9)	0	(0)
Diploma	1	(2.0)	2	(4.0)
Country of Birth:				
Australia	36	(70.6)	26	(52.0)
UK & Ireland	8	(15.7)	13	(26.0)
Europe	2	(3.9)	5	(10.0)
NZ	1	(2.0)	2	(4.0)
Asia	4	(7.8)	4	(8.0)

[a]The mean age of probands = 38.8, SD = 11.1, range = 18 - 59. [b]The mean age of healthy controls = 41.9, SD = 9.6, range = 22 - 60.

Table 3
Clinical characteristics of psychotic and non-psychotic patients

Clinical characteristics	Psychotic and non-psychotic patients (n = 51)[a]	
	n	(%)
Mode of onset of illness:		
Acute (within one week)	17	(33.3)
Subacute (in one month)	4	(7.8)
Gradual (up to 6 months)	15	(29.4)
Insidious (over 6 months)	15	(29.4)
Work status at onset of illness:		
Employed	40	(78.4)
Not employed	11	(21.6)
Patient status:		
In-patients	24	
Out-patients	26	

[a]The mean age at onset of illness = 25.3, SD = 9.8, range 11 - 49.

2.2 Measures

2.2-1 Demographic Forms

Each participant was interviewed by the researcher to obtain the demographic information shown in Table 2. The demographic details were obtained through different methods for the psychiatric sample compared with the healthy controls. The demographic details for the probands were derived from the Diagnostic Interview for Psychosis (DIP; CDHFS, in press). In order to obtain the same information, a brief demographic form was constructed for the controls. See Appendix G for a copy of this form.

2.2-2 Diagnostic Interview for Psychosis (DIP)

DIP

The DIP is a semi-structured clinical interview composed of three modules: a) demography and social functioning b) the OPCRIT-SCAN diagnostic module and c) a service utilisation module. It was developed for the Study of Low Prevalence Disorders which was part of the Australian National Survey of Mental Health and Well Being, 1997-1998. For the purpose of the present study, only the diagnostic module was utilised.

The diagnostic function of the DIP is based on the well established OPCRIT algorithm and selected interview questions from the SCAN. See Appendix H for a copy of the diagnostic module. In its primary form as the SCAN, it has been

concluded that it is an "acceptable, appropriate and reliable measure of psychopathology" (Janca, Üstün & Sartorius, 1994, p. 73).

Schedule for Clinical Assessment in Neuropsychiatry (SCAN)

The SCAN is a semi-structured clinical interview that has been used extensively, revised, investigated and validated over many years by the WHO (Janca et al., 1994). The SCAN is used by clinicians to assess, measure, and classify adult psychopathology. It consists of an interview schedule (the 10th edition of the Present State Examination (PSE) Wing et al., 1974), a glossary of differential definitions, the Item Group Checklist (IGC) and the Clinical History Schedule (CHS). It is divided into two main parts: non-psychotic and psychotic (including cognitive disorders, abnormalities of behaviour, speech and affect). The PSE (glossary based interview schedule) is central to the SCAN and it has a high intra-class correlation coefficient of .87 (Leff, Sartorius, Jablensky, Korten & Ernberg, 1992; Luria & McHugh, 1974).

Operational Criteria for Psychosis (OPCRIT)

The OPCRIT diagnostic algorithm includes an operational criteria checklist of 90 items of signs and symptoms linked to a glossary of definitions and generates

diagnoses of psychotic and affective disorders according to 12 major classification systems (Williams et al., 1996).

The OPCRIT checklist has been successfully applied in numerous studies worldwide, including genetic and epidemiological studies (e. g., Leboyer & McMuffin, 1991; Mant et al., 1994; Numberger et al., 1994; Williams, Farmer, Wessely, Castle & McGuffin, 1993). It has shown acceptable levels of inter-rater reliability within all different classifications (overall kappa ranging from .60 for the St Louis criteria to .82 for Schneider's FRS). ICD-10, DSM-III-R and RDC diagnoses showed kappas of .70, .73 and .75, respectively (Williams et al., 1996).

DIP training

Training is an essential requirement for using the DIP. The interviewer uses his or her clinical skills and judgement to decide whether a symptom has been present during the specified time and to what degree of severity. The periods include the "present state" (past four weeks), "past year" (about 11 months before present state) and "lifetime before" (any time previously). The introductory questions are mandatory followed by optional probes and prompts. Interviewers are encouraged to use information from all relevant sources, for example hospital files, staff and family when possible.

The researcher undertook training (provided by Professor Jablensky) in the use of the DIP and obtained a certificate of competence. The training included

watching and rating training videos and practice interviewing, co-rated by another trainee and revised by a senior researcher. To determine inter-rater reliability, four interviews were videotaped and independently rated by the trainer. A consent form was signed by the interviewees prior to recording the video tapes (see Appendix I).

2.2-3 Present State Examination Screener (PSES)

The PSES is a short version of the Present State Examination (PSE; Wing et al., 1974) for use as a screening instrument in the general population. This 22-item instrument is based on selected SCAN questions. The PSES was chosen in order to screen for psychiatric symptoms in healthy controls. (See Appendix J).

2.3 Procedure

The preliminary testing of the PSSI was piloted on 51 clinically stable patients and 50 healthy control subjects. The consultant psychiatrists and registrars at Royal Perth Hospital were informed of the selection criteria (age, education level, English fluency) and that a mixed "psychotic" and "non-psychotic" sample was required. During their admission to Royal Perth Hospital, patients were asked by the researcher, nurse or the psychiatric registrar if they would consent to take part in the research. When each patient voluntarily agreed to participate, an interview was arranged. The interviews took place in a private interview room at the hospital. Each participant was given an information sheet to read (see Appendix K) and a

consent form to sign (see Appendix L). Prior to data collection, each individual was fully informed by the researcher of the following: a) the aim of the research, b) the strict confidentiality of the data collected (assured that numerical codes were used so that no names appeared on any data forms), c) that there were no aversive procedures involved, and d) that the assessment was purely research related with no bearing on their current or future treatment and management.

The researcher was blind to the clinical diagnoses made by the registrar at the time of admission. All participants, regardless of provisional diagnosis, received standard verbal instructions pertaining to the completion of the PSSI. Also, the researcher was blind to the PSSI responses. The participants took between 15 and 30 minutes to complete this measure.

After a short break, the DIP interview was conducted by the researcher (Clinical Psychologist Intern). The interview usually ranged from 30 to 60 minutes, and up to 90 minutes in rare cases. Upon completion of the session, the researcher discussed the DIP responses with the psychiatric registrar and incorporated any other relevant clinical data available from charts and other informants. The purpose of this was to ensure that information from the administration of the DIP was congruent with all relevant information from the patients' clinical history. In order to generate operational diagnoses, the DIP data were analysed by using the OPCRIT computer program.

Parallel to the above procedure, healthy controls were approached and asked to participate in the research. The procedure and instructions were identical to that of the patient sample. However, the PSES screening questions were used instead of

the DIP. The researcher administered the interview, which took about five minutes. The subjects then completed the PSSI in an identical manner to the patients.

CHAPTER 3

Results

The reporting of the results in this section follows the sequence of the three phases in the development of the PSSI. The first comprises the selection of items for the PSSI. The second phase focuses on the psychometric properties of the PSSI, followed by an examination of the effect of insight on the reporting of symptoms. The third phase includes a subsection describing all the relevant details concerning the PSSI which was completed by the probands and controls. Another subsection describes the response to the Diagnostic Interview for Psychosis (DIP; CDHFS, in press). This interview was only conducted with members of the proband group.

3.1 PSSI revision

3.1-1 Item selection

Appendix M shows the number and percentage of each item positively endorsed by probands and controls. No items were endorsed by more than 80% of the patients. In the final draft of the PSSI (Appendix F) four of the original items (2, 13, 34 and 55) were removed. Two items were endorsed by fewer than 10% of the patients (13; movements other than those willed, or no movement at all and 34; objects look distant). The cut-off of a 10% endorsement rate was used to avoid excluding comparatively rare items of clinical significance as vulnerability markers

of schizophrenia and to test the correlation between important BS and FRS. For item 55 (thoughts blown away) 16.3% responded as "unsure" in addition to 8.2% of the patients who responded "I do not understand the wording of this statement". This item was removed because of the possible ambiguity in wording. Other items had lower endorsement rates of the "unsure" response, and these were not compounded by "I do not understand the wording of this statement". Item 2 (things roll past as if on film) was removed as it failed to fit into any of the BS or FRS categories.

3.1-2 Categorisation of items

Due to the large number of items retained and the relatively small sample size, it was deemed inappropriate to use factor analysis. Thus, because the BS are classified into subcategories, a Professor in Psychiatry with expertise in phenomenology and fluent in German grouped the items in accordance with Huber's BSABS subcategories and Schneider's FRS. Most of the BS items matched Huber's categories (refer to BSABS in section 1.2-5 in the introduction), but some did not. These were items 5, 9, 12, 33, 61 and 75. Items 33 (brain empty) and 61 (walking and running not under control) did not meet the definition for Schneider's *thought withdrawal* and *replacement of will* first rank symptoms. However, these items were considered to meet the definitions of specific BS. Also, item 12 (thoughts spoken aloud) was re-classified as tapping into first rank *loud thoughts* rather than meeting the criteria for a BS.

Similarly, items 5 (voices inside head) and 9 (voices not own thoughts) are not strictly FRS and were therefore separated into a category termed "other verbal hallucinations", with the control item 75 (heard name called). As these items are not strictly FRS they can be removed from the PSSI in future versions. However, the category was retained in the analysis in order to calculate its correlation with BS and to test whether these positive symptoms can be reliably detected by a self-report questionnaire. See Appendix N for a list of the PSSI categories.

3.2 Preliminary data screening

The PSSI data were inspected and entered into tables for probands and controls presenting the proportion of respondents who endorsed each response to an item as positive. These Tables appear in Appendix M.

Prior to an analysis of the data, variables were examined for outliers and distributional properties. The data from four participants (two patients and two controls) were omitted due to an apparent deviant pattern of responding (the patients reported "no" to all statements and the controls reported extreme endorsement rates).

Item 77 of the PSSI, which covers eight different avoidance reactions to symptoms, was not included in the analysis. Item 76 (qualitative statement) was not analysed either as it is not relevant to the focus of the thesis. Due to the very few endorsements of the "unsure" and "I do not understand the wording of this statement", these response categories were scored as missing values. Thus, the PSSI was analysed using only the "yes" and "no" responses.

3.3 Psychometric properties

3.3-1 Reliability

The Cronbach alpha reliability coefficient was used as a measure of the internal consistency of the PSSI. The coefficient derived for the total sample (N = 97) was .98; for the proband group (n = 49) it was .96; and for the control group (n = 48) it was .91. The alpha reliability coefficients were computed for each PSSI category (Appendix N shows the PSSI categories) on the total sample, probands and controls. The reliability coefficient for each group appears in the diagonal of the respective Tables in the following section (3.3-2). Table 4 shows that the reliability coefficients for each category in the total sample are acceptable, ranging from .80 to .90 (Nunally, 1978). Table 5 illustrates that reliability coefficients for each category for the probands are also acceptable (ranging from .73 to .84), although the coefficient for the *"other subjective thought disorder"* is only .61. A different pattern was obtained for the reliability coefficients for the control group (see Table 6). The category *"other verbal hallucinations"* did not reach an acceptable level of reliability. The coefficients of all other categories within this group ranged from .58 for the *FRS category* to .84 for the *"other subjective thought disorder"* category.

When the "basic symptoms categories" were collapsed into a combined BS variable group, the following coefficients were derived: total sample .97, probands .95; and controls .91. The FRS component obtained coefficients of .86 for the total

sample, .79 for the proband group and .59 for the control group.

3.3-2 Relationship among item groups

A series of correlational analyses (Kendall's tau b) was conducted to assess the strength of the associations among the PSSI categories. This analysis was performed in three parts. The first is on the total sample, the second on the probands and the third on the control group. The benefit of performing these analyses separately for patients and controls is that an assessment can be made as to the effect of diagnosis on the associations.

The following Tables contain three Kendall's tau correlation matrices. Table 4 contains the correlation coefficients for the total sample. It shows that all of the PSSI categories among the item groups for the total sample are significantly correlated with each other, ranging from .54 to .80. All of these coefficients were significant at the $p < .01$ level, one tailed. Table 5, which contains the correlation coefficients for the probands, shows that all of the item groups are significantly correlated ($p < .01$), except for the correlation between the "other verbal hallucinations" and the "other subjective thought disorder" categories ($\tau = p > .05$).

Table 4
Kendall's tau (b) correlation coefficients among item groups for the total sample

Item group	FRS	(1)	(2)	(3)	(4)	(5)	(6)
FRS	**.860**						
Other subjective thought disorder (1)	.700**	**.862**					
Other verbal hallucinations (2)	.668**	.544**	**.803**				
Subjective language & speech disorders (3)	.738**	.721**	.603**	**.907**			
Control of movements (4)	.711**	.677**	.605**	.801**	**.847**		
Disturbances of visual perception (5)	.611**	.567**	.537**	.613**	.646**	**.866**	
Other BS (6)	.746**	.764**	.584**	.734**	.717**	.597**	**.932**

Note. The reliability coefficient for each group (Cronbach alpha) appears in the diagonal of the Table.
**$p < .01$, one tailed.

Table 5
Kendall's tau (b) correlation coefficients among item groups for probands

Item group	FRS	(1)	(2)	(3)	(4)	(5)	(6)
FRS	**.790**						
Other subjective thought disorder (1)	.436**	**.613**					
Other verbal hallucinations (2)	.535**	.126	**.734**				
Subjective language & speech disorder (3)	.619**	.487**	.472**	**.831**			
Control of movements (4)	.555**	.437**	.412**	.679**	**.754**		
Disturbances of visual perception (5)	.468**	.357**	.397**	.482**	.484**	**.836**	
Other BS (6)	.573**	.472**	.379**	.566**	.580**	.500**	**.841**

Note. The reliability coefficient for each group (Cronbach alpha) appears in the diagonal of the Table.
**$p < .01$, one tailed.

It is apparent from Table 6 that the associations among the item groups in the control group are different to those seen in both the proband group and the total sample. It is worth noting that the "other verbal hallucinations" item group stands out as one that is somewhat inconsistent with the other item groups. The FRS item group was not significantly correlated with the "other subjective thought disorder" or the "other verbal hallucinations" categories. Also "other subjective thought disorder" was not significantly correlated with the "other verbal hallucinations" or the "disturbances of visual perception" categories. All the other correlations were significant ranging from .24 to .69. Those that reached statistical significance did so at $p < .05$ level.

Table 6
Kendall's tau (b) correlation coefficients among item groups for controls

Item group	FRS	(1)	(2)	(3)	(4)	(5)	(6)
FRS	**.588**						
Other subjective thought disorder (1)	.131	**.846**					
Other verbal hallucinations (2)	-.060	-.037	**.000**				
Subjective language & speech disorders (3)	.477**	.273*	-.084	**.757**			
Control of movements (4)	.341**	.369**	-.060	.687**	**.682**		
Disturbances of visual perception (5)	.242*	.224	-.049	.432**	.639**	**.672**	
Other BS (6)	.421**	.286*	-.072	.299*	.397**	.320*	**.650**

Note. The reliability coefficient for each group (Cronbach alpha) appears in the diagonal of the Table.
*p < .05, one tailed. **p < .01, one tailed.

3.3-3 Analysis of selected items of the PSSI: Correspondence with the DIP

Both clinical interviews and self-report questionnaires for diagnosing psychopathology require access to reported subjective experience. However, whether both of these formats are equally efficient is a contentious issue in the area of psychology and psychiatry (Atkinson et al., 1997). By matching items or groups of items that appear in the PSSI with corresponding or similar DIP symptoms (Appendix O), comparisons of their accuracy were made. If one or more items within a PSSI item group was positively endorsed, the patient was identified as

possessing that symptom. Similarly, if a patient had been rated positively on at least one of a group of items defining a DIP symptom, they were also identified as possessing that symptom. A series of chi-square tests was performed to assess the accuracy of the two independent measures (Appendix O). The results show that there was agreement among some of the items of the PSSI and the DIP. As a means of retaining a group-wise alpha level of .05 a Bonferonni correction was calculated. This reduced the test-wise alpha level to .004. As illustrated in Table 7, there was accuracy in responding to the *FRS groups* (X^2 (1, n = 49 = 25.12, p < .004) and the *delusions of passivity* (X^2 (1, n = 49 = 21.02, p < .004). However, Appendix O shows that several other symptoms, for example auditory hallucination and thought withdrawal, did not reach statistical significance between interview based indices and self-report.

Table 7
Chi-square (df) of questionnaire items and DIP symptoms

Questionnaire item	DIP symptom	X^2	p	p[a]
(51) Will replaced by force (57) Robot without a will of own (65) Unusual experiences	(59) Delusions of passivity	21.02	<.01	<.004
Percentage-positive FRS score:	Any:	25.12	<.01	<.004
(12) Thoughts spoken aloud (32) Thought echo (39) Thought insertion (43) Thoughts public (46) Thought withdrawal (45) Thought block (16) Voices commenting (51) Will replaced	(54)Thought insertion (55) Thought broadcast (56) Thought withdrawal (57) Thought echo			

[a]Bonferonni correction.

3.3-4 Analysis of Sensitivity, Specificity and Predictive Values

It could be argued that the PSSI is a composite of two independent screening measures, one to identify FRS and the other BS. To assess its suitability as a screening tool, points of optimal sensitivity, specificity, positive and negative predictive values are calculated. In light of its structure, these points were calculated for the complete inventory, the FRS component, and the BS component. The points were calculated in an iterative manner by use of the Shrout and Fleiss' (1981) formula.

For the purpose of this analysis, patients were defined as either "psychotic" (schizophrenia and "other psychotic" groups were combined into one) and "non-psychotic". This method of estimation is based on a 2 × 2 table matrix in which criterion diagnosis is crossed with endorsement or non-endorsement of symptoms at a prescribed level. Appendix P shows the method of calculation and explanation of the dependent variables. Through adjusting this level the optimum cut-off points are established.

The optimum cut-off points are shown in Table 8. A cut-off point of 10 provides the greatest sensitivity (.97), a specificity of .45, a positive predictive value (PPV) of .80 and a negative predictive value (NPV) of .60. A value of over .90 is considered to represent high accuracy (McDowell & Newell, 1996). In terms of the FRS component, at the cut-off point of 2 the screen obtained a sensitivity of .82, a specificity of .56, a PPVof .80 and a NPV of .60. For this component, reasonable values were obtained for sensitivity and PPV (that is values between .70 and .90

according to McDowell & Newell). Exploring the values for the BS only, various combinations were attempted without providing high optimum values. Table 8 shows that, according to conventions set by McDowell and Newell, the BS values indicate poor accuracy (that is values between .50 and .70).

Table 8
The optimised cut-off scores for the total PSSI, FRS and BS

	Cut-off	Sensitivity	Specificity	PPV	NPV
Total PSSI	10	.97	.45	.75	.83
FRS	2	.82	.56	.80	.60
BS	20	.64	.62	.69	.57

3.4 The effect of insight (DIP item number 65) on responding to the PSSI

The effect of insight, as measured by the DIP item number 65, on responding to the PSSI was not significant. Out of 56 BS, those who had insight present reported a mean number of 22.54 (SD = 11.26) items compared with those who did not have insight present (M = 27.00, SD = 15.56). In terms of the eight FRS, those who had insight present reported a mean number of 2.57 (SD = 1.91) and those who did not have insight reported a mean number of 3.29 (SD = 2.64) items. These differences were not significant.

3.5 Responding to the PSSI: Probands and Controls

The PSSI subsections required the calculation of aggregated scores that would simplify the subsequent statistical analysis. For the items that appear in categories 1 to 6, the number of items endorsed positively was calculated. This score was then divided by the total number of items in that category and then multiplied by 100 to produce a percentage-positive index.

As the number of items that appear in sections 7 to 11 were considered too few for the production of individual percentage-positive scores, these categories were collapsed and then a single score was calculated for this composite category termed *"other basic symptoms"*. Each item in section 12 was incompatible with the other categories used in this study. Thus, these items were treated separately unless otherwise specified. Therefore, no percentage-positive scores were calculated.

3.5-1 Presentation and comparison of PSSI category scores – Probands and Controls

Response to the PSSI, as a function of item categorisation and the status of the respondents (probands and controls), appear in Tables 9 and 10. Table 9 contains the data collected from the proband group. In order to determine whether probands and controls differed in rates of endorsement in different item groups, the mean percentage-positive item group scores were compared for each group.

A series of *t* tests was performed to test whether the responses of the probands and their controls were significantly different. A Bonferonni correction

was performed, which had the effect of setting the alpha level to .005. The results of all of these tests were significant at $p < .001$ (Appendix Q). Reference to Table 9 and 10 would support an argument that probands scored more highly in all categories than controls. This disproportionality in responding to the FRS is consistent with the prediction made in hypothesis 1, that the proportion of the probands reporting FRS will be significantly higher than in the control group.

Table 9
The mean percentage-positive item group scores for probands

	Males (n = 27)		Females (n = 22)		Total (n = 49)	
Item group	M	(SD)	M	(SD)	M	(SD)
FRS	43.06	(28.87)	24.43	(20.22)	34.69	(26.79)
Other subjective thought disorder	66.67	(27.72)	56.36	(24.40)	62.04	(26.53)
Other verbal hallucinations	44.44	(39.22)	34.85	(36.34)	40.14	(37.87)
Subjective language & speech disorders	56.90	(31.25)	38.00	(28.56)	48.42	(31.24)
Control of movements	37.45	(23.10)	28.80	(25.81)	33.56	(24.9)
Disturbances of visual perception	19.26	(17.30)	17.27	(22.92)	18.37	(19.83)
Other BS[a]	46.67	(20.92)	35.15	(22.74)	41.50	(22.29)
Other BS[b]	50.76	(21.03)	41.98	(23.33)	46.82	(22.40)
BS[c]	26.44	(12.06)	20.59	(12.83)	23.82	(12.63)
Adjusted total PSSI score [d]	31.52	(14.65)	23.55	(14.81)	27.94	(14.18)
Total PSSI score[e]	43.32	(20.89)	31.34	(20.77)	37.94	(15.11)

Emotional response[f]	N	(%)
Anhedonia	34	(66.7)
Anxiety	35	(68.6)
Feelings agnosia	21	(41.2)
Impressionability	28	(54.9)

Note. See Appendix N for a list of the categories referred to in this Table.
[a]This includes all items in categories 7 to 11. [b]This includes all items in categories 7 to 12.
[c]This includes all the BS in categories 2 to 12. [d]This includes all items in categories 1 to 11.
[e]This includes all items in categories 1 to 12. [f]The individual items in category 12.

Table 10
The mean percentage-positive item group scores for controls

	Males (n = 8)		Females (n = 40)		Total (n = 48)	
Item group	M	(SD)	M	(SD)	M	(SD)
FRS	3.13	(5.79)	1.56	(4.19)	1.82	(4.46)
Other subjective thought disorder	0	(0)	2.00	(7.58)	1.67	(6.94)
Other verbal hallucinations	0	(0)	0.83	(5.27)	0.69	(4.81)
Subjective language & speech disorder	2.27	(4.21)	5.00	(9.20)	4.54	(8.60)
Control of movements	4.17	(11.79)	1.67	(4.02)	2.08	(5.91)
Disturbances of visual perception	3.75	(10.61)	1.75	(6.75)	2.08	(7.43)
Other BS[a]	2.50	(7.07)	2.67	(6.00)	2.64	(6.11)
Other BS[b]	2.21	(6.24)	2.06	(4.72)	2.08	(4.93)
BS[c]	1.50	(3.85)	1.48	(2.58)	1.48	(2.78)
Adjusted total PSSI score[d]	1.63	(3.81)	1.58	(2.74)	1.58	(4.40)
Total PSSI score[e]	2.46	(5.78)	2.39	(4.16)	2.40	(2.90)
Emotional response[f]	N					
Anhedonia	0					
Anxiety	1					
Feelings agnosia	0					
Impressionability	1					

Note. See Appendix N for a list of the categories referred to in this Table.
[a]This includes all items in categories 7 to 11. [b]This includes all items in categories 7 to 12.
[c]This includes all the BS in categories 2 to 12. [d]This includes all items in categories 1 to 11.
[e]This includes all items in categories 1 to 12. [f]The individual items in category 12.

3.5-2 Responding within the FRS category

As the FRS is a major focus of the present study, it was considered both necessary and appropriate to further analyse this category. By dividing the FRS composite into its component items and performing individual chi-square tests, it is evident that the responding of the probands and controls was significantly different ($p < .003$, alpha level set by Bonferonni correction) for all of the comparisons (Appendix R). Tables 11 and 12 contain the percentage of respondents, by status, endorsing the FRS items. Table 11 contains the data relevant to the proband group.

The statistics that were used in the chi-square tests and which appear in Tables 11 and 12 represent the percentage of possible endorsements to a particular item (i. e., probands endorsing item 12 is 21 which is 42.9% of the total proband group ($n = 49$)). By referring to Tables 11 and 12, it is apparent that more members of the proband group endorsed the FRS than the control group. This pattern was consistent across all of the items.

Table 11
Number and percentage of probands who endorse FRS items

Item no.	Item label	Males (n = 27)		Females (n = 22)		Total (n = 49)	
		n	(%)	n	(%)	n	(%)
12	Speaking out loud	12	(44.4)	9	(40.9)	21	(42.9)
28	Thoughts aloud	12	(44.4)	9	(40.9)	21	(42.9)
32	Thoughts repeated	16	(59.3)	10	(45.5)	26	(53.1)
39	Thoughts into mind	10	(37.0)	2	(9.1)	12	(24.5)
35	Thoughts not own	12	(44.4)	4	(18.2)	16	(32.7)
43	Thoughts public	11	(40.7)	3	(13.6)	14	(28.6)
47	Thoughts outside	10	(37.0)	5	(22.7)	15	(30.6)
46	Thoughts taken	5	(18.5)	5	(22.7)	10	(20.4)
45	Mind blank	19	(70.4)	9	(40.9)	28	(57.1)
16	Voices talking to	10	(37.0)	2	(9.1)	12	(22.4)
19	Voices each other	9	(33.3)	2	(9.1)	11	(22.4)
22	Voices arguing me	5	(18.5)	2	(9.1)	7	(14.3)
51	Will replaced force	10	(37.0)	3	(13.6)	13	(26.5)
57	Robot controlled	7	(25.9)	8	(36.4)	15	(30.6)
65	Controlled	11	(40.7)	4	(18.2)	15	(30.6)

Table 12
Number and percentage of controls who endorse FRS items

Item no.	Item label	Males (n = 8)		Females (n = 40)		Total (n = 48)	
		n	(%)	n	(%)	n	(%)
12	Speaking out loud	0	(0)	1	(2.5)	1	(2.1)
28	Thoughts aloud	0	(0)	1	(2.5)	1	(2.0)
32	Thoughts repeated	2	(25.0)	2	(5.0)	4	(8.3)
39	Thoughts into mind	0	(0)	0	(0)	0	(0)
35	Thoughts not own	0	(0)	0	(0)	0	(0)
43	Thoughts public	0	(0)	0	(0)	0	(0)
47	Thoughts outside	0	(0)	0	(0)	0	(0)
46	Thoughts taken	0	(0)	0	(0)	0	(0)
45	Mind blank	0	(0)	2	(5.0)	2	(4.2)
16	Voices talking to	0	(0)	0	(0)	0	(0)
19	Voices each other	0	(0)	0	(0)	0	(0)
22	Voices arguing me	0	(0)	0	(0)	0	(0)
51	Will replaced force	0	(0)	0	(0)	0	(0)
57	Robot controlled	0	(0)	0	(0)	0	(0)
65	Controlled	0	(0)	0	(0)	0	(0)

3.5-3 Response to FRS and BS: By group and symptom type

The responses within the total sample were split into groups that corresponded to the particular needs of the hypotheses. In the first case, responses to the BS of the PSSI were analysed to test if members of the control and the "non-psychotic" patient groups were different (hypothesis 3). A chi-square test confirmed this difference to be statistically significant (X^2 (17) = 51.06, $p < .001$).

In the second case, the difference between responses to the FRS as compared to the BS was analysed within the control group (hypothesis 5) and within the "non-psychotic" patient group (hypothesis 6). Both of these differences were found to be statistically significant.

For the purpose of these analyses, the reporting of any one symptom was sufficient for them to be considered as positively endorsing the symptom group. In the control group, 20 individuals (41.7%) endorsed BS and eight (16.7%) endorsed FRS. This difference was statistically significant (X^2 (1, $n = 48$) = 5.86, $p < .05$). In the "non-psychotic" patient group, 15 individuals (100%) endorsed BS and ten endorsed FRS. This difference was also statistically significant (X^2 (1, $n = 15$) = 17.14, $p < .001$).

3.6 Differences among probands: PSSI

The proband group contains patients from three separate diagnostic groups. These are schizophrenia, "other psychotic" and "non-psychotic" disorders as

determined by one of OPCRIT's criteria (ICD-10). It has already been established that the proband group reports significantly more symptoms than the controls in this study. However, the diagnostic variability within the proband group was not considered in these analyses. Table 13 refers to an analysis in which the above three ICD-10 diagnostic groups were used. The scores which appear in, and form the basis for this table are percentage-positive scores.[1]

Schizophrenic and "other psychotic" patients were combined into one group - "psychotic", in order to make comparisons between "psychotic" and "non-psychotic" patients. Table 13 displays the means and their standard deviations for schizophrenic, "other psychotic", "psychotic" and "non-psychotic" patients. Where inferential tests were conducted, Bonferonni corrections were used to retain a group-wise alpha level of .05.

A series of ANOVAs was conducted to see whether there is a significant difference between the mean scores of the different diagnostic groups. The results showed that only in responding to the FRS category did the difference attain statistical significance (F (2, 45) = 6.3, p = .004). The differences in responding to the categories relating to BS did not approach statistical significance (all F values < 2). This result is contrary to the prediction that the patients diagnosed with schizophrenia will report significantly more BS compared with the "non-psychotic" group (hypothesis 4).

A series of Scheffé post hoc tests was conducted as a means of determining where these differences lay. In the FRS category the schizophrenic group reported a

[1] These scores derived in a manner identical to that explained in section 3.5.

significant greater number of symptoms (M = 47.16, SD = 27.26) than the non-psychotic group (M = 18.33, SD = 18.82), (t (35) = 3.81, p = .004).

After combining the schizophrenic and the "other psychotic" patient groups into one group of "psychotic" patients, subsequent independent t-tests revealed a similar result to that of the previous ANOVA analysis. The only significant difference between "psychotic" and "non-psychotic" patients was in response to the *FRS* category (t (47) = 3.53, p = .001). That the "psychotic" patients reported significantly more FRS than the "non-psychotic" patients is consistent with the prediction that those diagnosed with "psychotic" disorders will report significantly more FRS than those diagnosed without a "psychotic" disorder (hypothesis 2). No other statistically significant differences were detected. By referring to Table 13, the consistency of responses may be noted. In 88.9% of the categories, the schizophrenic respondents reported more symptoms than the members of the other two diagnostic groups.

Table 13
Means and standard deviations of item groups for OPCRIT (ICD-10) diagnosis of schizophrenia, other psychotic, psychotic and non-psychotic disorders

	% of items endorsed by *schizophrenic* patients (n = 22)		% of items endorsed by *other psychotics* (n = 12)		% of items endorsed by *psychotics* (n = 34)		% of items endorsed by *non-psychotics* (n = 15)	
Item groups	M	(SD)	M	(SD)	M	(SD)	M	(SD)
FRS total score	47.16	(27.26)	34.09	(24.43)	41.91	(26.81)	18.33	(18.82)
Other subjective thought disorder	61.82	(28.22)	63.64	(23.35)	61.18	(26.94)	64.00	(26.40)
Other verbal hallucinations	54.55	(37.86)	39.39	(32.72)	48.04	(36.87)	22.22	(34.88)
Subjective language/ speech disorders	57.02	(30.50)	40.28	(25.21)	52.14	(29.46)	40.00	(34.5)
Control of movements	40.4	(26.24)	30.30	(17.28)	35.95	(24.32)	28.15	(26.18)
Visual perception	20.00	(20.93)	16.36	(18.59)	18.53	(19.71)	18.00	(20.77)
Other BS[a]	47.88	(20.12)	38.18	(20.68)	43.92	(20.64)	36.00	(25.55)
Other BS[b]	49.65	(21.46)	37.06	(20.87)	44.79	(21.79)	37.95	(27.50)
BS[c]	26.95	(12.71)	22.64	(10.93)	25.52	(12.15)	21.07	(13.37)
Total PSSI score[d]	45.32	(21.40)	35.12	(18.27)	41.37	(20.74)	31.01	(21.46)

Note. See Appendix N for a list of the categories referred to in this Table.
[a]This includes all items in categories 7 to 11. [b]This includes all items in categories 7 to 12.
[c]This includes all the BS in categories 2 to 12. [d]This includes all items in categories 1 to 12.

3.7 Association between individual FRS items and BS categories

Due to the central role of the FRS in the present study it is was necessary to further analyse the significant association between this category and the BS. A series of correlation coefficients (Kendall's tau b) was computed for the association among single items that constitute the FRS category and the BS categories. Referring to Table 14, it is evident that each individual FRS item is significantly correlated with the items contained in the BS groups (all $p < .001$, two tailed). The values of these coefficients range between .39 and .61. This result supports the three predictions outlined in hypothesis 7.

Table 14
Kendall's tau (b) correlation coefficients among basic symptom item groups and FRS items on the total sample of subjects

	First Rank Symptoms (FRS) items							
	A[a]	B[b]	C[c]	D[d]	E[e]	F[f]	G[g]	H[h]
BS item groups								
Other subjective thought disorder	.503***	.507***	.380***	.519***	.425***	.594***	.467***	.554***
Other verbal hallucinations	.447***	.415***	.526***	.471***	.513***	.494***	.612***	.501***
Control of movements	.574***	.509***	.417***	.503***	.435***	.587***	.479***	.551***
Subjective language/ speech disorders	.552***	.475***	.400***	.491***	.388***	.580***	.460***	.484***
Disturbances of visual perception	.586***	.504***	.365***	.423***	.470***	.477***	.481***	.554***
Other BS[i]	.522***	.516***	.447***	.479***	.450***	.586***	.503***	.545***

Note. FRS items: [a]loud thoughts (12). [b]thought echo (32). [c]thought insertion (39). [d]thought broadcast (43). [e]thought withdrawal (46). [f]thought block (45). [g]voices commenting (16). [h]Will replaced (51). [i]This includes all items in categories 7-11.
***$p < .001$, two tailed.

3.8 Diagnostic Interview for Psychosis (DIP)

In order to assess the consistency in the classification of patients between the DIP and the PSSI, the number of symptoms reported by members of each of the diagnostic groups (DIP) was compared. The groups used for this analysis were schizophrenia, "other-psychotic" and "non-psychotic" disorders (see Table 15).

Chi-square tests were performed to test whether variation in responses were consistent with the DIP classification. An alpha level of .004 was used to avoid increasing the probability of committing a Type 1 error that accompanies multiple tests. An obvious difference in the responses (see Table 15) is that substantially more members of the schizophrenia group positively endorsed the FRS than members of the other groups. This trend is not evident in responses to the depressive symptoms (items 21 and 24). The results of the chi-square tests showed that this difference was statistically significant in 5 of the 14 items ($p < .004$). See Table 16.

Table 15
Number and percentage of symptoms reported by probands diagnosed with OPCRIT (ICD-10) diagnosis of schizophrenia, other psychotic and non-psychotic disorders

DIP symptom	Probands (n = 49) n (%)	Schizophrenia (n = 22) n (%)	Other-psychotic disorders (n = 12) n (%)	Non-psychotic disorders (n = 15) n (%)
(54) Thought insertion	11 (22.45)	11 (50.00)	0 (0)	0 (0)
(55) Thought broadcast	12 (24.50)	12 (54.55)	0 (0)	0 (0)
(56) Thought withdrawal	7 (14.30)	7 (31.80)	0 (0)	0 (0)
(57) Thought echo	13 (26.53)	10 (45.45)	3 (25.00)	0 (0)
(59) Passivity	10 (20.41)	10 (45.45)	0 (0)	0 (0)
(52) Running commentary	15 (30.61)	12 (54.55)	3 (25.00)	0 (0)
(53) Third person AH	11 (22.45)	9 (40.90)	2 (16.67)	0 (0)
(58) Primary delusions	5 (10.20)	5 (22.70)	0 (0)	0 (0)
(60) Persecutory delusions	20 (40.81)	17 (77.30)	3 (25.00)	0 (0)
(61) Delusions of influence	12 (24.50)	10 (45.45)	2 (16.67)	0 (0)
(62) Delusional perception	7 (14.30)	7 (31.80)	0 (0)	0 (0)
(64) Bizarre delusions	4 (8.20)	4 (18.20)	0 (0)	0 (0)
(21) Loss of pleasure	39 (79.60)	14 (63.60)	12 (100.0)	13 (86.70)
(24) Poor concentration	38 (77.60)	13 (59.10)	9 (75.00)	15 (100.0)

Table 16
Chi-square (df) of symptoms reported by probands diagnosed with OPCRIT (ICD-10) diagnosis of schizophrenia, other psychotic and non-psychotic disorders

DIP symptom	X^2 (df)	p
(54) Thought insertion	16.87 (2)	< .004
(55) Thought broadcast	18.91 (2)	< .004
(56) Thought withdrawal	9.69 (2)	.008
(57) Thought echo	9.33 (2)	.009
(59) Passivity	14.93 (2)	< .004
(52) Running commentary	12.46 (2)	< .004
(53) Third person AH	8.63 (2)	.013
(58) Primary delusions	6.60 (2)	.037
(60) Persecutory delusions	25.00 (2)	< .004
(61) Delusions of influence	10.18 (2)	.006
(62) Delusional perception	9.69 (2)	.008
(64) Bizarre delusions	5.16 (2)	.076
(21) Loss of pleasure	6.92 (6)	.328
(24) Poor concentration	7.84 (6)	.250

CHAPTER 4

Discussion

The purpose of this study was to develop a reliable self-report instrument to assess Schneider's (1959) FRS and Huber's (Gross et al., 1987) BS. A pilot study was conducted to clarify a number of key issues relating to FRS and BS, including their association and the capacity of psychiatric patients to accurately self-report these symptoms. The results indicate that it is possible to administer a self-report measure that produces results consistent with those elicited through a semi-structured psychiatric interview. The results further showed that FRS and BS are highly correlated. Overall, the analyses reported here suggest that the PSSI is a reliable and valid measure which is sensitive to the presence of FRS and BS.

4.1 The PSSI

4.1-1 Ability of the PSSI to detect FRS

As the PSSI is a self-report measure of FRS and because self-reporting of these symptoms is a relatively new concept, it was considered necessary to compare the results to that of a well established instrument (DIP) currently used in psychiatric settings. Using classifications elicited through the administration of the DIP, the reporting of FRS (PSSI) showed a significant difference in the total sample between the probands and the controls and a significant between-group difference within the proband sample.

Support was found for hypothesis 1, which stated that the probands (M = 34.69, SD = 26.79) would report significantly more FRS than the control group (M = 1.82, SD = 4.46). This is consistent with previous findings that have suggested that FRS occur mainly in the context of psychotic disorders and are, therefore, more likely to be elicited in psychiatric patients (Abrams & Taylor, 1973; Carpenter & Strauss, 1974; Carpenter et al., 1973; Mellor, 1970; Wing & Nixon, 1975). It should be noted, however, that those findings suggest that individuals with no psychiatric history can also experience and report FRS. Eight (16.7%) of the controls endorsed FRS such as: loud thoughts, thought echo or thought block. This result is consistent with a recent study that indicated that delusional ideation (including thought echo, thought broadcast, thought block, alien thoughts, replacement of will and auditory hallucinations), may occur in members of the "normal population" in higher percentages than expected (Verdoux et al., 1998). Others have also claimed that 10.4% of the normal population reported symptoms similar to clinical psychotic symptoms (van Os et al., 1999). However, the frequency of endorsement of symptom items such as auditory hallucinations in the non-clinical sample of this study suggest a much lower prevalence compared with previous work (e. g., van Os et al., 1999; Verdoux et al., 1998). This leads to question whether this is due to differences in the measures used or whether hospital employees are more likely to deny such symptoms than more anonymous samples of the general population.

Nevertheless, consistent with the conclusions of Verdoux et al. (1998) and van Os et al. (1999), this suggests that FRS, usually considered by clinicians to be an "all or none phenomenon" and, hence, clearly abnormal, may in fact be a

dimensional phenomenon that appears on a continuum ranging from "normality" to psychosis, rather than being distinctly categorical. This view lends support to other recent studies that aim to explore the dimensional nature of psychotic symptoms (e. g., Garety, 1985; Garety & Hemsley, 1994; Kendler et al., 1983; Strauss, 1969).

Support for a continuum model of psychopathology is provided by the results between different patient groups. The results supported hypothesis 2, which stated that the "psychotic" patients would report significantly more FRS than the "non-psychotic" patients ($\underline{M}$ = 41.91, $\underline{SD}$ = 26.81; $\underline{M}$ = 18.33, $\underline{SD}$ = 18.82, respectively). Statistically significant differences were found in the responses between the schizophrenic patients and the "non-psychotic" patients, and between the "psychotic" and the "non-psychotic" patients.

This is consistent with the findings reported for the DIP, where relevant FRS differentiated patients diagnosed with schizophrenia from "other psychotic" and "non-psychotic" disorders. This finding supports previous studies (Carpenter & Strauss, 1974; Carpenter et al., 1973; Taylor & Abrams, 1973) and is consistent with the understanding that FRS are not pathognomonic of schizophrenia (Carpenter et al., 1973).

The significant difference in the frequency of reporting FRS between psychiatric patients and controls, and within the group of psychiatric patients, suggests that the PSSI and particularly the FRS component, can discriminate between these groups. This finding is encouraging considering that the initial aim for the development of the PSSI was to produce a screening instrument that would be sensitive to the presence of FRS and BS in psychiatric patients.

4.1-2 Report of PSSI as a function of ICD-10 classification

To show that the reporting of BS on the PSSI was sensitive to diagnostic classification and was consistent with the previous literature in this area, endorsement of the BS was considered from a between group perspective. The groups that were used for this purpose included healthy controls, schizophrenic, "other psychotic" and "non-psychotic" patients (as diagnosed according to ICD-10). The results supported the third hypothesis that the "non-psychotic" patients (M = 21.07, SD = 13.37) would report significantly more BS than the control group (M = 1.48, SD = 2.78).

If one considers the absolute difference between the possible number of BS reportable (56) and the mean endorsement of these items by the control group (1.48), it may have been possible that this result was due to chance. However, a single sample *t* test confirmed that this was not the case and that this apparently low mean was significantly different from zero (t (47) = 3.68, p = .001). If one further considers that only 41.7% of this group actually endorsed any BS and the mean number of symptoms reported by this group is calculated, it showed the mean number of symptoms reported to be 3.5 (SD = 3.13). A further *t* test showed that this statistic was also significantly different from zero (t (19) = 4.57, p < .001).

This confirms that BS are experienced by both "non-psychotic" patients and members of the general population who do not have a psychiatric history. The evidence that BS occur in healthy controls is in accord with previous findings (Klosterkötter et al., 1996; Peralta & Cuesta, 1991), but contradicts Huber and

Gross' (1989) statement that BS do not occur in healthy individuals. Nevertheless, Gross (1997) has recently revised her position by stating that healthy individuals can experience level-one uncharacteristic BS, but not level-two characteristic BS, which are related to cognitive disturbances in thought, percept and psychomotor behaviour, and are thought to form the basis for FRS. It is noteworthy that this study focused mainly on level-two characteristic BS and hence BS may be reported more frequently by healthy controls if level-one uncharacteristic BS are included.

The finding that BS are reported by "non-psychotic" patients is consistent with the understanding that the experience of BS is not restricted to schizophrenic patients (Ebel et al., 1989; Klosterkötter et al., 1996; Peralta & Cuesta, 1994). These results lead us to suspect that BS, like FRS, exist on a continuum spanning "normality" and psychopathology, and not *only* on a continuum of psychopathology, as proposed by Huber and Gross (1989).

The fourth hypothesis was not supported by the current results. This hypothesis predicted that the schizophrenic patients ($\underline{M}$ = 26.95, $\underline{SD}$ = 12.71) would report significantly more BS than the "non-psychotic" patients ($\underline{M}$ = 21.07, $\underline{SD}$ = 13.37). Even though there was a trend that the schizophrenic patients endorsed more BS than the "non-psychotic" patients, this difference was not statistically significant. There are several possible explanations for this result. First, it may be that schizophrenic patients with a clinically predominant positive syndrome have difficulty in accurately reporting their symptoms (Huber & Gross, 1989). Also, in the absence of cross validation of the BS, it is possible that the PSSI is a poor predictor of BS. This is supported by the corresponding sensitivity, specificity and

predictive value analyses, which will be discussed later. It is also possible that due to the small sample size there was not enough power to show statistical significance.

The results are contrary to previous research that has concluded that BS, particularly those associated with distinct low-level cognitive disturbances in thought, perception, psychomotor and cenesthesias, occur significantly more frequently in schizophrenic patients than in "non-psychotic" patients (Ebel et al., 1989; Klosterkötter et al., 1996). Nevertheless, regarding the difference in responding between the BS categories, Ebel et al. (1989) did not find a significant difference between schizophrenic and "non-psychotic" patients concerning specific cognitive motor disturbances. They also found that compared with schizophrenic patients, depressed patients reported subjective disturbances in receptive and expressive speech more frequently. They suggest that this may be due to the psychomotor retardation experienced by depressed patients.

Consistent with Huber and Gross' (1989) theory, an explanation for this may be that "non-psychotic" individuals who later develop psychosis, experience more BS at an earlier stage, but that once psychosis sets in, BS are overshadowed by the florid psychotic symptoms and their detection becomes infinitely more difficult.

4.1-3 The association between FRS and BS as detected by the PSSI

Consistent with the speculation that BS are precursors to FRS and that they appear on a single continuum of severity (Huber & Gross, 1989), the differences in reporting of these symptoms in the controls and the "non-psychotic" patient group

were investigated. Hypothesis 5 relates to the endorsement rates of BS and FRS by controls. Results showed that the BS were endorsed by significantly more (20) than the number of controls (8) endorsing FRS. This difference was statistically significant. Consistent with hypothesis 6, "non-psychotic" patients reported significantly more BS (15) than FRS (10).

In the context that the reporting of FRS and BS varies between the controls and the probands and within the proband group, both at a statistically significant level, it is reasonable to suggest that this may indicate that both FRS and BS are distributed on a continuum of severity. Together, these results further indicate that FRS occur mostly in patients with severe mental illness. This supports the notion that FRS are an index of the severity of 'positive' psychotic disturbances in schizophrenic patients (Jablensky et al., 1992). Accordingly, BS tend to be more prominent and recognisable in the stages leading up to psychosis.

To address hypothesis 7, it was necessary to explore the relationship between the FRS and BS, as measured by the PSSI. The results are consistent with the suggestion that specific BS are highly associated with FRS (Peralta & Cuesta, 1991, 1992; Peralta et al., 1992). This is one reason why BS should be considered as "minor forms" of FRS. It is also consistent with the claim that specific BS are psychopathological vulnerability markers of impending florid psychosis (Gross et al., 1992; Klosterkötter, 1992; Klosterkötter et al., 1997). This leads one to question whether BS are precursors to FRS and hence predictors of conventional schizophrenia (Gross et al., 1992; Klosterkötter, 1992; Klosterkötter et al., 1997).

This preliminary study has demonstrated that through the use of a self-report measure it is possible to elicit, in a non-clinical population, experiences that are qualitatively similar to the psychotic phenomena described in clinical populations. Nevertheless, the probands reported significantly more FRS and BS than the healthy controls. An association between the reporting of BS and FRS was found, which supports a relationship between FRS and BS.

It has been argued that psychiatric patients, particularly those diagnosed with schizophrenia, are unable to report their symptoms reliably because they lack insight (e. g., Amador et al., 1994; David et al., 1995; McEvoy et al., 1996). As assessed by the DIP, ten patients diagnosed with schizophrenia, three patients diagnosed with "other psychotic" disorders and one diagnosed with a "non-psychotic" disorder, had been rated as having severely impaired insight. However, impaired insight did not appear to affect their ability to report their pathological experiences.

These results have demonstrated that clinically stable patients, diagnosed with schizophrenia, "other psychotic" and "non-psychotic" disorders, were able to report their experience of first rank psychotic and basic symptoms. This is notable given that the general consensus is that FRS cannot be reliably self-reported, particularly by patients with schizophrenia. This also supports the view that psychiatric patients have the capacity to report symptoms that reflect their psychopathology (Hamera et al., 1996; Verdoux et al., 1998; Voruganti et al., 1998).

The results of the present study supports Voruganti et al.'s (1998) conclusion that out-patients with severe mental illness, who are on maintenance treatment with anti-psychotic and/or antidepressant medication, can reliably appraise their

experiences using a self-report measure. That this study showed no noticeable difference between responses of the medicated out-patients and similarly controlled in-patients, adds further support to previous research findings. A question remains as to whether individuals with acutely severe psychotic and depressive symptoms can accurately report their symptoms.

4.2 Methodological considerations and preliminary psychometric properties

An important limitation of the present study is that, consistent with its exploratory nature, the sample size was comparatively small. It deviates however, in no major way from the clinical populations usually recruited in psychiatric research. Therefore, its size limitation should not be assumed to reduce the validity of the results. It will be shown that acceptable levels of reliability and concurrent validity were obtained. The psychometric properties that were calculated from this sample appear below.

4.2-1 Reliability

Preliminary analysis of the overall PSSI (in total 71 items, excluding four BS items removed, the qualitative statement and the eight avoidance reaction statements) yielded a high internal consistency with an alpha coefficient of .98 for the total sample, .96 for the proband group and .91 for the control group. This is consistent with previous studies of the FCQ (98 items) which obtained an internal

reliability of .97 coefficient alpha (Cuesta et al., 1996). It also exceeds the threshold of .70 set by Nunally (1978) for an acceptable level of reliability. It may appear that the large number of items contributed to the high alpha levels of the PSSI, but the comparison between it and the FCQ appears to nullify this argument.

The results of the subsequent within category reliability analyses showed support for the earlier separation of the items into clinically relevant groups. The first separation was performed on FRS (.86). A second separation was performed only on those items that represent BS (.97). Overall, the reliability coefficients met Nunally's (1978) criteria for acceptance and this effect was consistent across both the proband and the total sample groups. Ideally, the final reliability coefficients should be established using an independent sample. Future test-retest reliability of this instrument will provide further data on the relevant psychometric properties for the PSSI.

4.2-2 Concurrent validity

To the knowledge of the author, the PSSI is the first tool to elicit and assess FRS by means of self-report. In order to evaluate the concurrent validity of the PSSI, its responses were compared with analogous items assessed in a DIP interview. In originally constructing the PSSI, those items in the SCAN identified as being related to FRS were adopted and, after expert judgement, included in a form suitable for self-report.

The association of items and groups across the inventories is shown in Appendix Q. The correspondence across the inventories demonstrates that the PSSI has adequate concurrent validity at a diagnostically-specific level. If this correspondence across inventories is viewed from a patient-specific perspective (recognising their diagnostic classifications), we have further grounds for the claim that the PSSI does exhibit acceptable concurrent validity. In addition, these results show that the PSSI is an effective screening tool for the identification of FRS.

There are two other methodological issues that may have contributed to the strength of association in responses across the inventories. The first concerns the initial classification of patients into their diagnostic groups and the second concerns the possible influence of experimenter bias.

The diagnoses were derived through the administration of the DIP, which is a semi-structured interview with strict item definitions and rating scales. This makes diagnostic misclassification unlikely.

The use of two independent clinicians may have strengthened the credibility of the resulting diagnoses. However, this was beyond the resources of the current study, so the experimenter administered both the PSSI and the DIP. In countering an argument that experimenter bias did affect these results, it should be remembered that the DIP was administered after the PSSI and that the experimenter had no knowledge of the PSSI responses.

Both inventories were administered in the same experimental session. This arguably nullifies any effect that state based changes may have had on the results of

the concurrent validity assessments. Safeguards were imposed to guard against the effects of variation in illness severity.

It should be noted that these results refer only to individuals with psychiatric disorders who are not in an acute state. By excluding acutely disturbed subjects at this stage, we are unable to address the proposition that acutely psychotic individuals may have difficulty in accurately reporting their symptoms.

4.2-3 Sensitivity, specificity and predictive values

Taking into account the previously discussed methodological issues, the results of the sensitivity and specificity analyses indicated that the PSSI is a satisfactory screening tool for psychotic psychopathology. Support for this argument stems from comparisons between the sensitivity, specificity, positive and negative predictive values of the PSSI in relation to the FRS (Tandon & Greden, 1987) and, in relation to the BS (Klosterkötter et al., 1997). The similarity of the present study's results to that of the inventories used in the above studies (SADS and BSABS, respectively), given that these inventories are accepted as sensitive measures, justifies the claim that the PSSI is a satisfactory screening tool. The results indicate that the PSSI and the FRS component have reasonable to good sensitivity. However, sensitivity was relatively poor for the BS component and hence this component of the PSSI should not be used separately.

A possible limitation of the PSSI, in its current guise, is that it elicits

false-positive rates between 20% (FRS) and 31% (BS). However, this should not restrict its use, as it has been suggested that a screening instrument should be allowed to be liberal with false-positive diagnoses in order to reduce false-negatives to a minimum (Loranger, 1997). A caveat to consider is that a diagnostic bias may have inflated the sensitivity estimate and reduced the specificity. Ideally, these analyses should be conducted on a separate sample to that from which the scale was developed.

4.3 Clinical implications

Considering the inherently subjective dimension of the FRS and BS, a self-report screening instrument provides patients with an opportunity to describe their own perception of the subjective phenomena that psychiatrists regard as highly correlated with, and usually indicative of schizophrenia, but not necessarily diagnostic. It is encouraging that patients completed the questionnaire, without difficulty. The screening instrument is relatively simple and easy to apply in both out-patient and in-patient clinical practice, as well as in community samples. It is acceptable to psychiatric patients and it complements clinical judgement. Like any clinical tool, it should be supplemented with additional information to minimise the possible limitations of self-report. Its main function as a screening instrument is to identify individuals who are likely to receive a clinical diagnosis and who are then required to undergo further comprehensive assessments.

4.4 Theoretical implications

It can be speculated that the continuum of psychopathology proposed by Huber and Gross (1989) is similar to that proposed by Meehl (1962, 1989, 1990), suggesting that a spectrum of schizophreniform disorders exist, which ranges from schizotypal and schizoid disorders to chronic schizophrenia. Moreover, based on the association between the FRS and BS found in this study, it is plausible that FRS and BS may have the same underlying pathophysiological processes. Hence, if FRS are linked to an underlying pathophysiology, it is also likely that BS are part of the same process.

Is it possible then that individuals with schizophrenia spectrum disorders can have the same genetic predisposition as those with clinical schizophrenia and express the same emotional and neurocognitive deficits? Linking genetic predisposition and psychophysiological response may be premature at this stage, but descriptive phenomenology certainly provides a starting point. Because it could be argued that there is a strong association between FRS and BS, and if BS occur prior to the actual disease, earlier intervention guided by correct identification of BS would increase the likelihood of a better therapeutic outcome. However, in order to use the PSSI to detect such cases, norms must be established on a younger population sample (adolescents and younger adults) who are at risk of developing a psychiatric disorder.

4.5 Future research

The PSSI is potentially a useful instrument in a variety of clinical and research settings. Its psychometric properties require further study. In addition to validity, the reliability and the sensitivity of the PSSI should be further assessed on a larger sample. With an increased sample size, exploratory factor analysis could be used to identify the underlying factor structure of the PSSI. Another advantage of using a larger sample size is that confirmatory factor analysis could be used to verify clinically based models of symptomatology as they apply to the PSSI. Given that this is the first study that has delineated the psychometric properties of the English translated version of the BS, cross-cultural validation should be undertaken so that comparisons can be made between the English and German versions.

The effects that impaired insight, the severity of schizophrenic symptoms, medication, social desirability and various other self-report issues may have on psychiatric patients' ability to accurately report symptoms are at this stage inconclusive. Addressing the possible influence of these issues was beyond the scope of this study. Experimental manipulations that systematically explore these influences on PSSI responses will strengthen the clinical and research utility of this measure.

The present study supports the notion that BS are correlated with FRS. However, it did not test whether BS are good predictors of FRS formation. The PSSI can be used in future prospective studies, including those aiming to identify BS and apply appropriate intervention to prevent or attenuate the severe symptoms of schizophrenia that may develop at the end of the continuum.

In order to understand the manifestations of schizophrenia in the light of brain-behaviour relationships, a reliable description of clinical symptoms experienced by each patient is crucial. Such information may conceivably map onto new findings in the exploration of the symptoms' pathophysiological basis in both clinical and non-clinical populations. As stated by Jablensky (1997) "...significant associations between dynamic cerebral processes and psychopathology will be eventually found at the level of symptoms and syndromes rather than at the level of disorders as defined in the current diagnostic systems." (p. 122). The PSSI can assist epidemiological, clinical and neurocognitive investigations.

4.6 Conclusion

This study has added to the evidence that there is considerable merit in the use of Schneider's (1959) FRS as reference points for the diagnosis of schizophrenia. As a preliminary investigation of a new screening tool, this study indicated that FRS may be reliably and accurately elicited by a self-report instrument in clinically stable psychiatric patients. At present, there is no self-report instrument in general use that can screen for psychosis. The FRS section of the PSSI is a sensitive screening device that can be completed in minutes.

This study shows that the PSSI with further development may be used to place patients on a continuum of severity, possibly assisting in decisions about intervention. This provides a possible starting point for a suitable research program and further exploration of clinical, genetic and theoretical issues in psychopathology.

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Appendix A

Schneider's First-Rank Symptoms as defined in the SCAN (WHO, 1992b) Glossary.

1 HALLUCINATIONS

1.1 *Voices commenting on thoughts or actions*
A voice or voices speaking about respondents (R) and therefore referring to them in the third person.

1.2 *Third person auditory hallucinations*
Third person voices are experienced as speaking about R, often between themselves.

2 SUBJECTIVELY DESCRIBED THOUGHT DISORDER AND EXPERIENCE OF REPLACEMENT OF WILL

2.1 *Delusional mood and perplexity*
R feel that familiar surroundings have changed in a way that may be difficult to describe but that is charged with significance and self-reference and, above all, puzzling. Something odd seems to be going on and the atmosphere may rapidly seem to become ominous and threatening. R seeks for an explanation, which may be based on misinterpretations of ordinary observations or on perceptual abnormalities.

2.2 *Loud thoughts*
R say that their own thoughts seem to sound 'aloud' in their head, almost as though someone standing nearby could hear them.

2.3 *Thought echo*
R experience their own thoughts as repeated or echoed (not spoken aloud) with very little interval between the original and the echo. The repetition may not be perfect, however, but subtly or grossly changed in quality.

2.4 *Thought 'broadcast'*
R experience their thoughts as diffusing out of their minds so that they can be experienced by others. The experience is passive, in the sense that it is not willed but experienced. Moreover, there is no necessary implication that the thoughts can be heard.

2.5 *Thought commentary*
R reports that there is more than one stream of thought in the mind. Thoughts recognised as alien or intruded may comment on R's thoughts or on something R is doing or reading or writing.

2.6 *Thought block*

When they are flowing freely R experiences a sudden and unexpected stopping of thought. When this occurs it is dramatic and usually happens on several occasions. The experience is passive.

2.7 *Thought withdrawal*

R say that their thoughts have been taken out of their minds so that they have no thoughts. The experience is passive in the same sense as that of thought broad cast; it is not willed but experienced. The difference is that no thoughts are left behind and there is an experience of actual withdrawal which often leads to explanatory delusions.

2.8 *Other subjective disorder of thought*

Include other manifestations of the basic experience. For example respondents may report that their thoughts are moved from left to right, that they cannot tell which are their own thoughts, that they sense their thoughts as outside their head.

2.9 *Replacement of will by external force*

R experience their will as replaced by the intentions of some other force or agency. The experience is passive, in that it is not under conscious control, but it may be actively resented. R believe that someone else's words are coming out using their voice, or that what they write is not their own, or that they are the victim of possession-a zombie or a robot controlled by someone's else's will, even their bodily movements being willed by some other power.

2.10 *Replaced control of voice*

R feel that their voice is under the control of an outside agency and produce speech without a sense of intention. They may be surprised by what they say or by the odd quality of their voice, which may be difficult to accept as their own.

2.11 *Replaced control of handwriting*

R feel that the movements and content of their handwriting or typing are alien, not intended by them, not under their control, taken over by an outside force or agency.

2.12 *Replaced control of actions*

A similar alienation to that of item 2.11 but involving any other actions, for example walking or running. In extreme cases, R may feel that nothing they do is the product of their intentions.

2.13 *Replaced control of thoughts*

This can be seen as an extreme form of thought insertion. In this case the R lose the sense of possession over all their thinking processes, so that none are experienced as their own.

2.14 *Other types of replaced control*

Other experiences include 'made' feelings, emotions, intentions, physical sensations (burning sensations in parts of the body, for example) and physiological response (e.g., sexual arousal).

Appendix B

From: Scharfetter (1995)

Frankfurt Questionnaire for Basic Disorders (FBF)

In order that we may arrive at a more accurate picture of your condition, we should be grateful if you would answer the following questions about various nervous symptoms.

Your answers will be treated as strictly confidential.

Please answer "yes" and put a cross in the relevant box if you have experienced the symptom described. You should answer "no" if the symptom in question is not present. If one of the symptoms was experienced some months ago (or longer ago) but is not now present, answer "yes" but add the word "previously".

A blank space has been left under each question. Please use this to amplify your answer if you so wish. For example, how often something happens, or any special characteristics of the symptom in your case.

✓ 1	I worry about becoming less and less capable of thinking.
✓ 2	I get confused because too many thoughts are in my head.
✓ 3	At times everything rolls past me as if on a film, as if my eyes could not take anything in properly.
✓4	My thoughts are often so persistent, it is as if something inside me was speaking out loud.
5	My speech doesn't come out properly, although the words I want to say are in my head.
6	Little everyday activities no longer run smoothly, I have to ponder over every single step.
✓7	At times I am incapable of reacting, I just have to wait till things get going again.
✓8	There are huge gaps in my memory, much of what I know has simply disappeared.
✓ 9	Sometimes when I make a movement I can't feel my limbs moving.
✓ 10	Quite ordinary extraneous noises, which I used not to notice, distract me excessively.
✓ 11	When I walk I am at times conscious of every single step.
12	My own thoughts can suddenly terrify me.
13	Sudden inappropriate ideas often distract my thoughts.
✓ 14	People's faces have seemed odd, as if distorted or dislocated.
15	My sexual desires have declined.
✓16	I can no longer enjoy myself properly.
17	Even when I'm doing ordinary things I don't feel sure I'm doing them correctly and there's no accounting for this.
18	Sometimes I feel I'm in a state of suspension.
✓ 19	At times things seemed out of focus, crooked.
✓ 20	When I want to raise my arm, for example, it sometimes happens that I make some other movement instead or I just can't do anything.
✓ 21	I am often unable to distinguish between noises, I hear them all mixed up together.
22	I am no longer in proper control of what I say or do.
✓23	At times it seems as though the ground on which I stand is rising or crumbling away.
24	Sometimes familiar things have a different colour.
25	At times sounds have a different tone.
✓26	I can no longer take in clearly and distinctly enough what is around me.
27	What I see before me often does not get into my head correctly and I am unsure about it.
28	I no longer have a good appetite.
✓29	At times everything around me seemed small.

30 Sometimes I have to fix my gaze firmly on one spot, otherwise everything swims before my eyes.
31 I find it very difficult to form sentences on any length.
32 When I look around sometimes a particular object leaps into the foreground, even though I wasn't looking at it.
33 I often notice that I utter words that are not those I meant to say.
34 If I want to get up from a chair, for example, or do something else like that, I am sometimes not sure whether I can do it straight away.
35 It requires a constant effort to put my thoughts in order.
36 My concentration is getting worse and worse because my thoughts keep getting in a jumble and there's nothing I can do about it.
37 If I read texts of any length I mostly forget the beginning and lose the thread.
38 When I'm doing ordinary everyday tasks, I have first to consider carefully all the steps I have to take.
39 I feel as though I can no longer concentrate my thoughts on anything specific.
40 When reading I often hesitate before an ordinary word and have first to consider what it means.
41 I don't sleep as well as I used to.
42 When I talk I often lose the word I was just going to say.
43 At times my brain seems to have been emptied of everything.
44 Sometimes I stop in the middle of a movement and wonder how to complete it.
45 At times everything would seem to have been moved a long way away.
46 My daily routine often gets into a muddle, because I have forgotten my habits.
47 Sometimes everything swims before my eyes.
48 Often I begin to do something and then am aware that I no longer know what I really wanted to do.
49 Food doesn't taste the same as it used to.
50 On the street or in a room it would seem as though walls or objects were pressing in on me.
51 Sometimes I stand still, so that the things around me will stop wobbling.
52 When I want to remember something specific I am unable to do so because something completely different comes into my mind.
53 Some perfectly ordinary sound can suddenly seem far too loud.
54 When I want to concentrate my thoughts, inappropriate words keep coming into my mind and distracting me.
55 I get anxious about nearly everything that happens to me every day.
56 Anything unexpected unsettles me, though I can give no reason why it should.
57 I get on best when everything follows its usual course.
58 I am too alert, I watch everything that is going on even though I do not want to do this at all.
59 My facial expression often becomes something I don't want it to be.
60 I frequently don't know what has just gone on around me.
61 It is often too much for me when things are being done or said around me and I have to withdraw in order to regain my equilibrium.
62 I find myself stopping suddenly in the middle of doing something, for no reason at all.
63 Sometimes I can't take in the whole, but only parts, for example of a face or a row of houses.
64 It is often a great effort to keep my muscles under control.
65 When I'm talking to someone I dare not let myself be distracted or I can't come quickly enough to mind.
66 I can't manage to speak as well as I used to, the words don't come quickly enough to mind.
67 I often see everything blurred and hazy, though I am not giddy.

✓68 When I try to visualise something I can't get the details to come together.
✓69 When someone speaks to me I hear the words but often can't make sense of them.
✓70 It is unpleasant how my thoughts often seem to have been blown away.
71 Sometimes I would like to speak but I can't because the words suddenly aren't there any more.
72 Music doesn't sound the same as it used to.
✓73 I often find that for a moment or two I don't know what I've just done or said.
74 Sometimes I get into a strange and alien state of mind, which frightens me.
75 Everything goes much more slowly than it used to, because I have to concentrate hard on everything.
✓76 Often I see something and for a minute or two am not sure whether I have just imagined it.
77 I often have difficulty in carrying out little tasks such as washing, dressing or tidying up, because I have to keep on considering what step comes next and what follows after that.
78 My memory is no longer intact, I keep noticing that there are gaps.
✓79 Sometimes objects move even though I am not looking at them intensely or for any length of time.
80 I can't think and at the same time take in what is around me. I've got to concentrate entirely on one thing or the other.
✓ 81 At times a movement just goes on repeating itself, I can't stop it.
82 I often skim through a few lines when reading and have no idea what they mean.
83 Even in the most ordinary situations I have to be constantly on the alert, to be sure what I'm doing is right
✓ 84 When I've been reading, letters have seemed distorted or upside down or altered in some other way.
85 I can no longer decide what I want to think about.
✓ 86 I am sometimes momentarily as if paralysed and incapable of reacting even though I want to.
✓87 When I get excited I often don't know if I feel happy or angry.
✓88 Sometimes I stop in the middle of a sentence, without meaning to.
✓ 89 I fell vulnerable, everything affects me too strongly.
✓ 90 I don't like reading because it's such an effort for me to understand properly what it means.
✓ 91 I can no longer visualise the faces of people I know well.
92 When I looked in the mirror I looked so strange that I was terrified.
✓93 I withdraw from people because I have such difficulty in following conversations.
✓ 94 If someone speaks in long sentences I find it particularly difficult to grasp the meaning.
95 Even routine jobs are a strain because I have to keep on considering what to do next.
✓ 96 I often notice that I do not act in the way I want to: I am not sufficiently able to control what I do.
✓97 I can no longer cope very well with television, it is difficult for me to follow both pictures and speech at the same time and to grasp what is going on.
✓98 I am afraid that my concentration is getting worse and worse.

I also have the following difficulties:

It helps me and improves my condition
If I withdraw a lot
If I work slowly
If I stay quiet and do not move much
If I concentrate on a few activities and let everything else go
If I stay a lot in the same rooms
If I do not talk much

If I avoid all disturbances
If I avoid emotional excitement

Appendix C

July 1998

Dear Dr

Re. ***Development and evaluation of a self-administered screening instrument for First Rank Symptoms (FRS) in Schizophrenia and other disorders.***

I refer to our previous discussion in which you agreed to be a member of an expert panel, reviewing the self-administered screening instrument for First Rank Symptoms (FRS). Thank you for taking the time to evaluate this instrument. I asked you to become a member because of your clinical expertise in psychiatric phenomenology. Your contribution to the instrument development will be invaluable

The aim of this study is to develop a self-administered questionnaire designed to detect the subjective experience of Schneider's first-rank symptoms (FRS). It is conceptually based on the Schedules for Clinical Assessment in Neuropsychiatry ([SCAN], WHO, 1992). This project is part of a Masters of Psychology (Clinical). It has been approved by the Ethics Committees at Royal Perth Hospital, Graylands Hospital and Edith Cowan University. The project is supervised by Professor Assen Jablensky, University Department of Psychiatry and Associate Professor Edward Helmes, School of Psychology, Edith Cowan University.

I attach a copy of the research proposal. This outlines the background, aims and methodology. Also, I attach a copy of the first draft of the instrument for your review. At this time the content or meaning of the items is to be reviewed.

Please address the following for each item:

1. Rate on the scale provided how relevant items are to operational definitions.
2. Rate whether the content domain adequately measures all dimensions of the construct.
3. Rate whether the entire item pool is sufficient to represent the total content domain.

Please suggest revisions for items that are not consistent with the operational definitions, including addition or deletion of items. Clarity of item construction, wording and readability will be addressed in a later review. However, by using the wording scale, please comment on this if you wish.

Please return your review to me at the following address by the **31 July 1998**:

Risk Management Department
Royal Perth Hospital
Box X2213 GPO
PERTH WA 6847

Thank you
Kind regards,

Borghild Bø
Rehabilitation Coordinator/Psychologist
Fax No: 9224 1137 Phone: 9224 2901 e-mail: borgbo@rph.health.wa.gov.au

SECTION 2. LAY DESCRIPTION (1 page only)
Insert a short description of your project in plain English. Lay members of the Committee wish to understand the aims of the study, its scientific significance, and how it will affect the patients or subjects.

FULL TITLE OF PROJECT
Development and evaluation of a self-administered screening instrument for First Rank Symptoms (FRS) in Schizophrenia and other disorders.

LAY TITLE OF PROJECT
A Screening Instrument for Symptoms of Psychosis.

LAY DESCRIPTION OF PROJECT. Describe the project briefly in lay terms, avoiding technical jargon. Lay members of the Committee wish to know the gist of the project and its capacity for benefit or harm to trial subjects. Do not exceed the space available on this page.

The aim of this study is to develop an effective self-administered instrument, specifically designed to detect the subjective experience of the so-called first-rank symptoms (FRS), and conceptually based on the Schedule for Clinical Assessment in Neuropsychiatry ([SCAN], WHO, 1992a). FRS are characteristic symptoms in schizophrenia and include a particular type of auditory hallucinations, subjectively experienced thought disorder and experience of passivity or replacement of will. The concept of FRS is widely used by clinicians and researchers in the study of psychotic phenomenology and in the diagnosis of schizophrenia (Crichton, 1996). There are several structured clinical interviews designed to examine the symptomatology and diagnostic criteria of schizophrenia, but these are time consuming and cannot be readily applied in studies on large samples, including non-clinical populations. There remains a paucity of standardised self-administered instruments for population studies (Hamera, Schneider, Potocky & Casebeer, 1996). If available and validated, such an instrument would facilitate the study of the sensitivity, specificity and positive predictive value (PPV) of FRS in the diagnosis of psychiatric syndromes, as well as the exploration of their pathophysiological basis.

The screening instrument is intended to be relatively simple and easy to apply in outpatient and inpatient clinical practice as well as in community samples. It will complement clinical judgement. In order to understand the manifestations of schizophrenia in the light of brain-behaviour relationships, the reliable description of clinical symptoms as experienced by the patients is crucial. An effective self-administered screening instrument will therefore, assist epidemiological, clinical and neuro-cognitive investigations.

The participants will not be negatively affected by this research. The screening instrument provides the patients with an opportunity to describe their own perception of the phenomena psychiatrists regard as diagnostic of schizophrenia. Their participation is voluntary. They will be asked to participate in one interview and to fill in one questionnaire taking 45 minutes in total. The questions asked are all related to symptoms they are likely to have experienced in the course of their illness. The participant is able to withdraw from this study at any time. The research will in no way impact on the participants' treatment.

SECTION 3. SCIENTIFIC DETAILS

Insert essential scientific details of the background to the study, the study hypothesis to be tested with sample size calculations, and methods (including inclusion and exclusion criteria). Use technical language, but be brief (2 pages maximum, within the margins shown). Do not repeat details given on pages 2 & 3. [Additional documentation may be necessary for new studies under CTN or CTX schemes]. Use 10 point font or larger.

1. INSERT STUDY HYPOTHESIS:

This is a developmental study and hence no a priori hypotheses is stated. The following research questions will be addressed:

I	Evaluation of the reliability, construct and concurrent validity of the self administered items in the screening instrument.
II	Examination of the capacity of the screening instrument to detect FRS, validated against the SCAN.
III	Investigation of the prevalence of FRS in a series of unselected consecutive admissions of patients with schizophrenia and in other diagnostic groups.
IV	Examination of the stability of FRS over time.
V	Analysis of the frequency of FRS in patients diagnosed with schizophrenia and other diagnostic groups.

2. Sample size calculations.

This is a design and test development study assessing reliability. It is not a case control or cohort study and hence the table provided for quantitative comparisons cannot be used. Cronbach Alpha and Factor Analysis will be used to measure the internal consistency of the homogeneity of items. Kappa will be used to measure inter-rater reliability. The minimal sample size required for assessing the reliability of rating scales is based on the points of a scale. Using the formula ($N \geq 2K^2$) provided by Cicchetti (1976), a 3, 4, 5, 6, 7 point scale requires a minimum sample size of 20, 30, 50, 75 and 100, respectively. The proposed study's sample size is 50, using a 2 point scale of 'true' and 'false' items.

3. Scientific Background (do not exceed remaining 1.5 pages of space; use ≥ 10 point fontsize)

Notwithstanding the operational importance of FRS (Andreasen & Carpenter, 1993), the literature highlights a lack of consensus concerning their definition, frequency and predictive value (Andreasen & Flaum, 1994; Carpenter et al., 1996; Crichton, 1996; David & Appleby, 1992; Koehler, 1979). This variability among studies may be due to methodological inconsistencies concerning the measurement of FRS. However, despite criticism over the past decade concerning their specificity, reliability, base rate and hence prognostic significance (Andreasen & Flaum, 1994; Crichton, 1996), the concept of FRS is still widely used.

It has been pointed out that the discrepancy of the prevalence rates of FRS may reflect the lack of consensus in the criteria utilised and the method of detecting FRS (Radhakrishnan, Mathew, Richard & Verghese,1983). This discrepancy may also be due to the definitions used and how narrowly they were defined (O'Grady, 1990). In order to establish whether the FRS can be used as a valid indicator of schizophrenia, Koehler (1979) asserted that the definitions of FRS need to be operationalised, using "narrow" criteria. He pointed out that many researchers (eg. Fish, 1969, cited in Koehler, 1979; Mellor, 1970; Taylor and Heiser, 1971; Wing et al., 1974) had used rather wide definitions which might have resulted in inflated estimates of their frequency. Given the limited details provided of the methods used in previous studies and the issues related to definition, the reliability of reported results is uncertain.

More recent studies have overcome some of the above methodological flaws by using structured clinical interviews. Yet, the presence or absence of FRS is still estimated by using quite variable methods of assessment. Employing the Schedule for Affective Disorders and Schizophrenia (SADS), for example, the presence of FRS was reported in 60% of individuals diagnosed with schizophrenia (N=294) (Tandon and Gredon, 1987), compared with 5% for patients diagnosed with major depressive disorder. This study also found that the specificity of FRS for schizophrenia was 97% with a predictive value of 90%. These findings lend support to the "FRS scenario" as suggestive of schizophrenia, highly discriminating and useful in its differential diagnosis (Carpenter & Strauss, 1974; Radhakrishnan et al., 1983).

SCIENTIFIC BACKGROUND (continued): Page 5

Method

Participants

I *Preliminary item analysis of psychiatrists and patients:*

a) Five to eight psychiatrists will be selected to evaluate the content validity of the items. The criteria include: knowledge of the theoretical aspects of instrument design and clinical expertise in psychiatric phenomenology.

b) At least 20 clinically stabilised patients with and without FRS will similarly be asked to evaluate the items.

II *The sample of the initial development of the screening instrument.*

a) This sample will consist of a mixed diagnostic group (schizophrenia and other diagnoses) of at least 50 participants, where at least 25 of the patients will have a diagnosis of schizophrenia and the remaining individuals will have other diagnoses. Patients who meet the inclusion criteria and consent to participation will be included in the project. The criteria for participation in the study will include: aged between 18 and 65, an English reading level of Year 8, an ability to give voluntary informed consent and no mental retardation (IQ under 70).

b) Normative sample

An additional 50 patients representative to IIa will be used. A subset of this group of patients will be used for retest one week later.

Recruitment

I a) Candidates who meet the criteria will be approached with a view to participate in the project.

I b) These patients will be selected from participants in the heterogeneity project at the Centre for Clinical Research in Neuropsychiatry (CCRN).

II a & b)

The participants in the initial development study (N=50) will be recruited from a series of unselected consecutive admissions to Royal Perth Hospital and Graylands Hospital in Western Australia. The patients for the normative sample will be recruited and assessed as described for IIa.

Measurement

The SCAN is a structured instrument that has been used extensively, revised, investigated and validated over many years (WHO, 1992). The appropriate sections of the SCAN will be used to validate against the self-administered screening instrument's ability to detect the same symptoms.

Procedure

It is intended that the self-administered symptom screening instrument developed in this project will be derived from the appropriate SCAN operational definitions related to FRS in the glossary. The operational definitions of FRS will be decomposed and re-written in a closed response format of "true" and "false" statements. In order to achieve this, a pool of questions will be drafted and the aim is to construct several items with alternative wordings for each symptom. To capture the essence of how FRS are subjectively perceived by the patient, the wordings will be generated from existing videotapes of patients' SCAN "real life interviews" held at the CCRN in Western Australia.

The draft version will then be passed on to a panel of experts, who independently will examine and scrutinise the items for operational relevance and provide comments of alternative wordings where necessary. Any modifications of the instrument that are suggested by the expert panel will be incorporated into the second draft. The items will then be similarly evaluated by a small number of clinically stabilised patients. Appropriate modifications of the instrument will be made.

Following this process, a developmental study will be conducted on at least 50 patients to establish the instrument's final item composition (test-retest and internal consistency). Upon admission, the consultant psychiatrist will be asked to provide patient data such as demographics [age, gender, education level, and fluency of the English language] length of illness, medication, provisional diagnosis and other observations. When the prospective participants have voluntarily agreed to participate in this project and a valid informed consent has been obtained, an interviewing schedule will be arranged. Assessments will then be conducted blind to the provisional diagnosis, other data and the patient. The SCAN interview will be conducted by the researcher (Clinical Psychologist Intern), whereas the screening instrument will be administered separately by a psychiatric nurse. The researcher will undergo a formal training course in the use of the relevant sections of the SCAN. To determine inter-rater reliability, the SCAN interview conducted with patients, will be videotaped and independently rated by the principal supervisor. The calculated intra-class correlation will be reported

An additional 50 patients will be used to establish reliability. A subset of this group of patients will be used to establish the test-retest reliability where the screening instrument will be administered one week later.

[End of scientific details]

RATING SCALES

Content relevance	*Wording*
To rate each item, please circle the appropriate number under each item: *1 = the item is not relevant to the operational definition (OD)* *2 = the item needs major revisions to be relevant to the OD* *3 = the item needs minor revisions to be relevant to the OD* *4 = the item is relevant to the OD*	*For each item, from the following list please write the relevant number(s) in the boxes next to each item:* *1. Confusing item* *2. Ambiguous or vague wording* *3. Complex item* *4. Lengthy item* *5. More than one idea* *6. leading item* *7. Unclear sentence structure* *8. Inappropriate wording* *9. Misinterpretation possible* *10. Emotionally charged item* *11. Respondent unlikely to understand*

THE INSTRUMENT FOR FRS

We would like to know if you have experienced any of the various symptoms described on the following pages. For each statement, place a tick in the "present" box, if you have experienced this symptom *over the past four (4) weeks.* Place a tick in the "previous" box, if you have experienced this symptom *prior to the past four weeks.* **No response is recorded if you are or have not experienced the symptom described.**

PresentPrevious

1. Internal hallucinations S1 7.007

Definition - Inner voices or images, perceived with the vividness and concreteness characteristic of hallucinations but lacking external projection.

H1 - I hear voices within/inside? my mind, head and/or ears. | | |

1 2 3 4

Comments:

Suggestions:

I hear voices when there is no-one around. | | |

1 2 3 4

Comments:

Suggestions:

---

2. Voices commenting on thoughts or actions S 17.008

Definition - a voice or voices speaking about respondents (R) and therefore referring to them in third perso Consciousness is clear.

H2 - I hear voices commenting on what I am thinking or doing. | | |

1 2 3 4

Comments:

Suggestions:

H3 - I hear voices saying what I am reading, or describing what I am seeing on television as I see it.

1 2 3 4

Comments:

Suggestions:

H4 - I hear voices, that other people cannot hear, commenting on what I was doing or thinking.

1 2 3 4

Comments:

Suggestions:

I hear voices that other people cannot hear.

1 2 3 4

Comments:

Suggestions:

---

3. Third person AH 17.009

Definition - Third person voices are experienced as speaking about R, often between themselves.

H5 - I hear voices talking to each other about me, without talking directly to me. For example, here is a taste of his/her own medicine, he/she is going to wash, its about time, what is he/she up to now?

1 2 3 4

Comments:

Suggestions:

H6 - I hear voices talk about me between themselves.

1 2 3 4

Comments:

Suggestions:

H7 - I hear voices talk to each other about me.

1 2 3 4

Comments:

Suggestions:

I hear two or more voices, that other people cannot hear, talking to each other, discussing me.

1 2 3 4

Comments:

Suggestions:

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4. Delusional mood and perplexity - S18.001

Definition - R feel that familiar surroundings have changed in a way that may be difficult to describe but that is charged with significance and self-reference and, above all, puzzling. Something odd seems to be going on and the atmosphere may rapidly seem to become ominous and threatening. R seeks for an explanation, which may be based on misinterpretations of ordinary observations or on perceptual abnormalities.

T8 - I have had the feeling that something odd is going on that I cannot explain.

1 2 3 4

Comments:

Suggestions:

T9 - I feel puzzled by strange happenings that are difficult to account for.

1 2 3 4

Comments:

Suggestions:

T10 - Familiar surroundings seem strange.

1 2 3 4

Comments:

Suggestions:

T11 - I reach conclusions or unusual insights that other people often do not believe/that seem strange to other people.

1 2 3 4

Comments:

Suggestions:

T12 - I feel that my familiar surroundings have changed in a way that I cannot explain.

1 2 3 4

Comments:

Suggestions:

T13 - I knew something odd was going to happen.

1 2 3 4

Comments:

Suggestions:

---

5. Loud thoughts

Definition: - R say that their own thoughts seem to sound 'aloud' in their head, almost as though someone standing nearby could hear them.

T14 - My own thoughts seem to sound aloud in my head, almost as though someone standing nearby/next to me? could hear them.

1 2 3 4

Comments:

Suggestions:

---

6. Thought echo

Definition - R experience their own thoughts as repeated or echoed (not spoken aloud) with very little interval between the original and the echo. The repetition may not be perfect, however, but subtly or grossly changed in quality.

T15 - Thoughts in my head/mind seem to be repeated over again, like an echo. | | | |

1 2 3 4

Comments:

Suggestions:

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7. Thought insertion

Definition - The R lack the normal sense of ownership of the thoughts in their mind. Their thoughts are experienced as alien, not their own. The symptom excludes a belief that R has unwanted thoughts; for example, if the Devil seems to be inducing evil thoughts. In the most typical case, the alien thoughts are said to have been inserted into the mind from outside, by means of radar or telepathy or some other means.

T16 - I have thoughts in my mind which are not my own, which seem to come from elsewhere. | | | |

1 2 3 4

Comments:

Suggestions:

Thoughts that are not mine, are being put into my mind. | | | |

1 2 3 4

Comments:

Suggestions:

Other people intrude their thoughts upon mine. | | | |

1 2 3 4

Comments:

Suggestions:

T17 - Alien thoughts have been inserted into my mind from outside. | | | |

1 2 3 4

Comments:

Suggestions:

---

8. Thought 'broadcast'

Definition - R experience their thoughts as diffusing out of their minds so that they can be experienced by others. The experience is passive, in the sense that it is not willed but experienced. Moreover, there is no necessary implication that the thoughts can be heard.

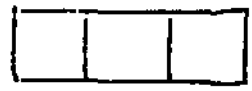
T18 - My thoughts seem to be somehow public, not private to myself, so that others can know what I am thinking.

1 2 3 4

Comments:

Suggestions:

T19 - My thoughts seem to leak out of my head, so others know what I am thinking.

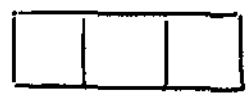


1 2 3 4

Comments:

Suggestions:

T20 - My thoughts are available to others.



1 2 3 4

Comments:

Suggestions:

People know what I am thinking.

1 2 3 4

Comments:

Suggestions:

Others can hear my thoughts, even if they are not in the same room.

1 2 3 4

Comments:

Suggestions:

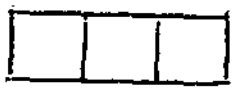
T21 - I project my thoughts.

1 2 3 4

Comments:

Suggestions:

My thoughts are shared by others, even if they are not in the same room.



1 2 3 4

Comments:

Suggestions:

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9. *Thought commentary*

Definition - R reports that there is more than one stream of thought in the mind. Thoughts recognised as alien or intruded may comment on R's thoughts or on something R is doing or reading or writing.

T22 - There is more than one stream of thought in my mind, not under my control. For example, alien thoughts commenting on my thoughts, or on something I am reading, writing, seen or done.

1 2 3 4

Comments:

Suggestions:

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10. *Thought block*

Definition - When they are flowing freely R experiences a sudden and unexpected stopping of thought. When this occurs it is dramatic and usually happens on several occasions. The experience is passive.

T23 - I often have thoughts that sometimes stop suddenly, so that my mind is completely blank, although I do not want to stop thinking.

1 2 3 4

Comments:

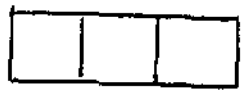
Suggestions:

---

11. Thought withdrawal

Definition - R say that their thoughts have been taken out of their minds so that they have no thoughts. The experience is passive in the same sense as that of thought broad cast; it is not willed but experienced. The difference is that no thoughts are left behind and there is an experience of actual withdrawal which often leads to explanatory delusions.

T24 - I have had thoughts that have been taken out or sent out of my mind, so I have no thoughts.



1 2 3 4

Comments:

Suggestions:

Other people or forces are taking my thoughts away.

1 2 3 4

Comments:

Suggestions:

Someone or something can take my thoughts out of my mind.

1 2 3 4

Comments:

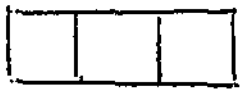
Suggestions:

---

12. *Other subjective disorder of thought S18.11*

Definition - Include other manifestations of the basic experience. For example respondents may report that their thoughts are moved from left to right, that they cannot tell which are their own thoughts, that they sense their thoughts as outside their head.

T25 - Other subjective disorder of thought.



1 2 3 4

Comments:

Suggestions:

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13. Delusions of passivity — replacement of will by external force (S18.12)

Definition - R experience their will as replaced by the intentions of some other force or agency. The experience is passive, in that it is not under conscious control, but it may be actively resented. R believe that someone else's words are coming out using their voice, or that what they write is not their own, or that they are the victim of possession-a zombie or a robot controlled by someone's else's will, even their bodily movements being willed by some other power.

W26 - I feel that my will has been replaced by some force or power outside myself, for example, God or Spiritual Power.

1 2 3 4

Comments:

Suggestions:

W27 - I do not feel I have a will of my own.

1 2 3 4

Comments:

Suggestions:

I feel I am without a will of my own.

1 2 3 4

Comments:

Suggestions:

W28 - It is like being a robot, zombie or puppet, controlled from elsewhere, without a will of my own.

1 2 3 4

Comments:

Suggestions:

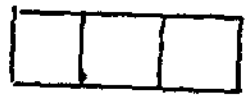
W29 - My intentions have been replaced by those of some external power, for example, God.

1 2 3 4

Comments:

Suggestions:

W30 - My thoughts are under the control of some outside agency, so I do not recognise my thoughts as my own.

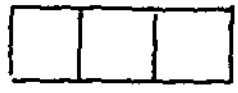


1 2 3 4

Comments:

Suggestions:

W31 - My feelings are controlled, or made by something, or somebody outside myself.

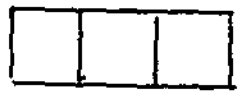


1 2 3 4

Comments:

Suggestions:

W32 - It seems that, for example, God has taken over entirely.



1 2 3 4

Comments:

Suggestions:

W33 - I am aware of the power outside myself, operating through me.

1 2 3 4

Comments:

Suggestions:

---

14. Replaced control of voice (S18.13)
Definition - R feel that their voice is under the control of an outside agency and produce speech without a sense of intention. They may be surprised by what they say or by the odd quality of their voice, which may be difficult to accept as their own.

W34 - I hear myself saying things that I do not recognise and did not intend, as if, it is not my own.

1 2 3 4

Comments:

Suggestions:

W35 - It seems that God speaks with my voice.

1 2 3 4

Comments:

Suggestions:

W35 - My voice is a channel and used by God or spiritual guides to speak through me or my voice.

1 2 3 4

Comments:

Suggestions:

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15. Handwriting (S18.14)
Definition - R feel that the movements and content of their handwriting or typing are alien, not intended by them, not under their control, taken over by an outside force or agency.

W36 - I write things that I have not intended, because it is taken over by/under the control of an outside force or agency.

1 2 3 4

Comments:

Suggestions:

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16. Symptom - Actions (S18.15)
Definition - A similar alienation to that of item 2.11 but involving any other actions, for example walking or running. In extreme cases, R may feel that nothing they do is the product of their intentions.

W37 - I feel that everything I do is under outside control. For example, I am made to run or walk by God or Aliens.

1 2 3 4

Comments:

Suggestions:

W38 - My actions are outside my control, so I cannot recognise them as my own. | | | |

1 2 3 4

Comments:

Suggestions:

---

17. Replaced control of thoughts (S18.16)
Definition - This can be seen as an extreme form of thought insertion. In this case the R lose the sense of possession over all their thinking processes, so that none are experienced as their own.

W39 - My thoughts are under the control of, for example, God, so I do not recognise my thoughts as my own. | | | |

1 2 3 4

Comments:

Suggestions:

---

18. Other experiences of replaced control (S18.17)
Definition - Other experiences include 'made' feelings, emotions, intentions, physical sensations (burning sensations in parts of the body, for example) and physiological response (e.g. sexual arousal).

W40 - I experience other kind of control of, for example, my impulses or my sensations. | | | |

1 2 3 4

Comments:

Suggestions:

---

19. S18.13 - 17
Without my intentions the following is controlled by an outside force, power or agency, as if, its not my own:

Saying things, for example the force moved my lips and I began to speak
Writing things
Actions or movements such as running, walking or dancing
Thoughts
Impulses
Sensations | | | |

1 2 3 4

Comments:

Suggestions:

---

20. Delusional perception (S19.009)

Definition - An intrusive, often sudden, knowledge that a common percept has a radically transformed meaning. A normal percept, image or memory takes on an entirely new significance. The initial perception may sometimes be related to a specific experience that makes the effect more dramatic. For example, someone undergoing liver biopsy felt, as the needle was inserted, that he had been chosen by God. A women getting off a bus on a November night was struck on the forehead by a leaf and immediately knew she had been sent to save the world.

X41 - When I saw, for example, a plane cross the sun, I at once knew that alien beings had chosen me for their ambassador on earth.

1 2 3 4

Comments:

Suggestions:

For the above statement I experience the following:
There is no natural explanation for this.
I knew at once what it meant.
I am sure and could not be mistaken that this is directed at me personally.

1 2 3 4

Comments:

Suggestions:

I receive urgent and personal signs and messages from another world.

1 2 3 4

Comments:

Suggestions:

People do things in a special way to convey a meaning to me.

1 2 3 4

Comments:

Suggestions:

Please evaluate the entire instrument for comprehensiveness and total content domain

1 2 3 4

Comments:

Suggestions:

Other items to consider for inclusion include: validity (eg. determined by the lie & test-taking scales from the MMPI), social desirability (eg. Marlowe-Crowne Test of SD) & insight.
Many thanks for your contribution!

Appendix D

Schneider's First Rank Symptoms (FRS), according to the SCAN (WHO, 1992b) glossary items, represented in the PSSI by one or more statements.

FRS according to SCAN glossary item	PSSI item
Internal Hallucinations (S 17.007)	I sometimes hear voices inside my head. (Item 5)
	I sometimes hear voices that other people cannot hear. They are not my thoughts. (Item 9)
Voices commenting (S17.008)	I hear two or more voices talking to each other about what I am doing. (Item 16)
Voices arguing-third person (S17.009)	I hear two or more voices talking to each other about me, without talking directly to me. (Item 19)
	I hear two or more voices arguing between themselves about me. (Item 22)
Audible thoughts (S18.004)	My own thoughts seem to sound aloud in my head, almost as though someone standing nearby could hear them. (Item 28)
Thought echo (S18.005)	Thoughts in my head seem to be repeated over and over again, like an echo. (Item 32)
Thought withdrawal (S18.010)	Sometimes my brain seems to have been emptied of everything. (Item 33)
	Sometimes my thoughts are taken out of my mind by some outside person or force, so I have no thoughts of my own. (Item 46)
Thought insertion (S18.006)	I have thoughts in my mind which are not my own, which seem to come from somebody else. (Item 35)

	Thoughts that are not mine are being put into my mind. (Item 39)
Thought broadcast (S18.007)	My thoughts seem to be somehow public, not private to myself, so that others can know what I am thinking. (Item 43)
Thought block (S18.009)	Even though I want to keep on thinking, my thoughts often stop suddenly, so that my mind is completely blank. (Item 45)
Subjective disorder of thought (S18.11)	At times I feel my thoughts are outside my head.(Item 47)
Replacement of will by external force (S18.12)	I feel that my will has been replaced by that of some force or power outside myself. (Item 51)
	I feel like a robot, zombie or puppet, controlled from somewhere else or by somebody else, without a will of my own. (Item 57)
Replaced control (S18.13-17)	Sometimes the things I do, such as walking, running, sitting down, speaking or writing, are not under my control; It does not seem to be me that is doing them. (Item 61)
Other experiences of control (S18.17)	I have unusual experiences of being controlled, for example, sexual arousal or a feeling of electricity in my body. (Item 65)

Appendix E

CHECKLIST

Please consider the following questions for each statement. Circle your appropriate response and provide comments and suggestions when required.

QUESTIONS

---

1. Were there any unclear words and/or language in the items? Yes No
   If Yes, please highlight this on the questionnaire.

2. Did any item offend you? Yes No
   If Yes, please list number of item(s) ___ ___ ___ ___ ___ ___

3. Are the subjective experiences accurately covered by the questions?
   Yes No

4. Is the questionnaire length adequate? Yes Too long Too short

5. Would you prefer to fill in the questionnaire by yourself or to be interviewed? Please underline

6. Would a few examples of the experiences, given in brackets after each question, be helpful? Yes No

7. Would you like to give an example of your experience after each question? Yes No

8. Are the instructions for answering the statements clear and understandable? Yes No

9. Did the order of the items seem appropriate? Yes No

Please provide any other suggestions that you consider important.

Thank you - I really appreciate your contribution.

Listed below is a series of statements about experiences some people have. I am interested to find out if you have had any of these experiences.

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = DON'T UNDERSTAND the wording of this statement

PRACTICE EXAMPLE:

I try to sleep every night	*0*	*1*	*2*	*3*
	no	*yes*	*unsure*	*?*

1. I worry about becoming less and less capable of thinking.	0	1	2	3
2. At times everything rolls past me as if on a film, as if my eyes cannot take anything in properly.	0	1	2	3
3. At times I am not able to react, I just have to wait till things get going again.	0	1	2	3
4. There are huge gaps in my memory, so that much of what I used to know has simply disappeared.	0	1	2	3
5. I sometimes hear voices inside my head.	0	1	2	3
6. Sometimes when making a movement, I do not feel my limbs moving.	0	1	2	3
7. When walking, I am sometimes conscious of every step.	0	1	2	3
8. Quite ordinary outside noises, which I have not noticed before, distract me a lot.	0	1	2	3
9. I sometimes hear voices that other people cannot hear. They are not my thoughts.	0	1	2	3
10. Sometimes people's faces look to be unusual to me, almost distorted or displaced.	0	1	2	3
11. I get confused because too many thoughts are in my head.	0	1	2	3
12. My thoughts are often so persistent, that it seems like something inside me is speaking them out loud.	0	1	2	3
13. When I want to raise my arm, sometimes I make some other movement instead, or I cannot do anything at all.	0	1	2	3

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = I DON'T UNDERSTAND the wording of this statement

	no	yes	unsure	?
14. I can no longer enjoy myself properly.	0	1	2	3
15. At times things seem blurry or out of focus.	0	1	2	3
16. I hear two or more voices talking to each other about what I am doing.	0	1	2	3
17. I am often not able to distinguish between noises, so I hear them all mixed up together.	0	1	2	3
18. At times it seems as though the ground I am standing on is moving about or crumbling away.	0	1	2	3
19. I hear two or more voices talking to each other about me, without talking directly to me.	0	1	2	3
20. I find it very difficult to form long sentences.	0	1	2	3
21. I am no longer clearly and distinctly aware of what is around me.	0	1	2	3
22. I hear two or more voices arguing between themselves about me.	0	1	2	3
23. Sometimes everything around me looks reduced in size.	0	1	2	3
24. My concentration is getting worse and worse because my thoughts keep getting in a jumble and there is nothing I can do about it.	0	1	2	3
25. When reading, I often hesitate before a common word and have to first consider what it means.	0	1	2	3
26. Sometimes I have to fix my gaze firmly on one spot, otherwise everything swims before my eyes.	0	1	2	3
27. If I want to do something, like get up from a chair, I am sometimes not sure whether I can do it straight away.	0	1	2	3
28. My own thoughts seem to sound aloud in my head, almost as though someone standing nearby could hear them.	0	1	2	3

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = I DON'T UNDERSTAND the wording of this statement

	no	*yes*	*unsure*	*?*
29. It requires a constant effort to put my thoughts in order.	0	1	2	3
30. If I read texts of any length, I tend to forget the beginning and lose the thread.	0	1	2	3
31. When I talk, I often lose the word I was going to say.	0	1	2	3
32. Thoughts in my head seem to be repeated over and over again, like an echo.	0	1	2	3
33. Sometimes my brain seems to have been emptied of everything.	0	1	2	3
34. Sometimes objects around me seem to have been moved a long way away.	0	1	2	3
35. I have thoughts in my mind which are not my own, which seem to come from somebody else.	0	1	2	3
36. I am too alert, I watch everything that is going on even though I do not want to.	0	1	2	3
37. My daily routine often gets into a muddle, because I have forgotten my habits.	0	1	2	3
38. On the street or in a room, I sometimes feel that walls are falling in on me.	0	1	2	3
39. Thoughts that are not mine are being put into my mind.	0	1	2	3
40. Perfectly ordinary sounds can suddenly seem far too loud.	0	1	2	3
41. When I want to concentrate on my thoughts, the wrong words keep coming into my mind and distracting me.	0	1	2	3
42. I get anxious about nearly everything that happens to me.	0	1	2	3
43. My thoughts seem to be somehow public, not private to myself, so that others can know what I am thinking.	0	1	2	3

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = I DON'T UNDERSTAND the wording of this statement

	no	*yes*	*unsure*	*?*
44. The expression of my face is often different to what I want it to be.	0	1	2	3
45. Even though I want to keep on thinking, my thoughts often stop suddenly, so that my mind is completely blank.	0	1	2	3
46. Sometimes my thoughts are taken out of my mind by some outside person or force, so I have no thoughts of my own.	0	1	2	3
47. At times I feel my thoughts are outside my head.	0	1	2	3
48. Sometimes I do not see things as a whole, (for example only part of a face).	0	1	2	3
49. It is often a great effort to keep my arms and legs under control.	0	1	2	3
50. I cannot speak as well as I used to, the words do not come quickly enough to mind.	0	1	2	3
51. I feel that my will has been replaced by that of some force or power outside myself.	0	1	2	3
52. I often see everything blurred and hazy, though I am not giddy.	0	1	2	3
53. When I try to visualise something, I cannot form the mental picture properly.	0	1	2	3
54. When someone speaks to me, I hear the words but often cannot make sense of them.	0	1	2	3
55. It is unpleasant how my thoughts often seem to have been blown away.	0	1	2	3
56. I find that for a moment or two, I do not know what I have just done or said.	0	1	2	3
57. I feel like a robot, zombie or puppet, controlled from somewhere else or by somebody else, without a will of my own.	0	1	2	3
58. Often I see something and for a minute or two I am not sure whether I have just imagined it.	0	1	2	3

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = I DON'T UNDERSTAND the wording of this statement

	no	*yes*	*unsure*	*?*
59. Objects seem to move even though I am not looking at them.	0	1	2	3
60. Sometimes a movement of my arms and legs goes on by itself, and I cannot stop it.	0	1	2	3
61. Sometimes the things I do, such as walking, running, sitting down, speaking or writing, are not under my control; It does not seem to be me that is doing them.	0	1	2	3
62. Sometimes when I am reading, letters seem distorted, upside down or altered in some other way.	0	1	2	3
63. I am sometimes momentarily paralysed and incapable of reacting even though I want to.	0	1	2	3
64. When I get excited, I often do not know if I feel happy or angry.	0	1	2	3
65. I have unusual experiences of being controlled, for example, sexual arousal or a feeling of electricity in my body.	0	1	2	3
66. Sometimes I stop in the middle of a sentence, without meaning to.	0	1	2	3
67. I feel vulnerable, everything affects me too strongly.	0	1	2	3
68. I am reluctant to read, because I have so much trouble grasping the meaning correctly.	0	1	2	3
69. I can no longer visualise the faces of people I know well.	0	1	2	3
70. I withdraw from people, because I have so much trouble following conversations.	0	1	2	3
71. If someone uses long sentences, it is very difficult for me to grasp the meaning.	0	1	2	3
72. I often notice that I do not act in the way I want to: I am not able to control what I do.	0	1	2	3

Please carefully read each statement below and circle the number which best applies to you.

0 = NO
1 = YES
2 = UNSURE
3 = I DON'T UNDERSTAND the wording of this statement

	no	*yes*	*unsure*	*?*
73. I can no longer cope very well with television because it is difficult to follow both pictures and speech at the same time and grasp what is going on.	0	1	2	3
74. I am afraid that my concentration is getting worse and worse.	0	1	2	3
75. I have heard my name called out, as if by another person, but I have been quite alone at the time.	0	1	2	3

76. I also have the following difficulties/experiences:

77. If you have circled number one (1) in any of the above statements, please circle YES or NO for the following:

I feel better if I keep away from other people most of the time as much as possible.	YES	NO
I feel better if I take things easy.	YES	NO
I feel better if I stay quiet and avoid rushing about.	YES	NO
I feel better if I concentrate on a few activities and let everything else go.	YES	NO
I feel better if I stay in familiar places.	YES	NO
I feel better if I do not talk much.	YES	NO
I feel better if I avoid all disturbances.	YES	NO
I feel better if I avoid emotional excitement.	YES	NO

MANY THANK YOU FOR YOUR HELP

Appendix G

Demographic Form

ID Number: **Initials:**

Sex: **M F**

DOB: **Reported Age:**

Country of Birth:

Age of arrival in Australia:

Marital Status (Please circle): **Is currently, or has been married (includes same sex & de facto partnership at least 6 months).**

Single; has never married or lived as married

Year level of Education:

Occupation:

Religion

DIAGNOSTIC INTERVIEW FOR PSYCHOSIS (DIP)

NUMBER

ENERAL ITEMS

Source of rating (OP 1)

1= Hospital case notes (charts)
2= Structured interview with patient
3= Prepared abstract
4= Interview with informant
5= Combined sources including structured interview
6= Combined sources not including structured interview

Time frame (OP 2)

1= Present or most recent episode
2= Worst ever episode
3= Lifetime ever occurrence of symptoms & signs
4= Other specified episode or time period

Sex Code (OP 3)

Code biological sex.

0= Male
1= Female.

following questions 4-8 are optional and are not required for an OPCRIT diagnosis

4. Date of interview (day/month/year)

5. Date of birth

What is your date of birth? (day/month/year)

6. Reported age

How old are you? (range 00-99)

7. Country of birth

What country were you born in?

01= Australia
02= UK & Ireland
03= Europe (including former USSR)
04= North America
05= Central & South America
06= NZ, Pacific Islands, PNG
07= South East Asia
08= Indian Subcontinent & other Asia
09= Middle East
10= North Africa
11= Central & Southern Africa
12= Other

8. Age at migration

What age were you when you arrived in Australia? 99 = NA

Single (OP 6)

What is your marital status?

- *Have you ever been living with a partner for 6 months or more?*

0= Is currently, or has been married (includes same sex & de facto partnership at least 6 months)
1= Single; has never married or lived as married.

0. Age of onset (OP 4)

I would like to ask about the first time you became ill with a psychiatric problem.

- *When did you first experience psychiatric problems?*
- *When did others first say that they thought you had a psychiatric illness?*
- *How old were you when you first had contact with psychiatric services?*
- *Can you tell me about that?*

Enter age in years, eg. 35. This should be given to the nearest year and is defined as the earliest age at which medical advice was sought for psychiatric reasons OR at which symptoms began to cause subjective distress or impair functioning. If age at first hospital admission only available, then score that age. NB: code earliest age. If denies illness, use all available sources (eg hospital records); if no episode of psychiatric disorder rate 00. (range 00-99)

1 Mode of onset (OP 5)

How did that first episode of psychiatric illness start?

- *Did the problem start very abruptly, or was there quite a long period when you knew you were becoming unwell?*
- *How long would you say that was?*

0= No episode
1= Abrupt onset definable to within hours or days
2= Acute onset definable to within 1 week
3= Moderately acute onset definable within 1 month
4= Gradual onset over period up to 6 months
5= Insidious onset over period greater than 6 months
NOTE: Rate up if in doubt.

2. Definite psychosocial stressor prior to onset of first episode (OP 16)

What was going on in your life when you first became unwell?

- *Were there a lot of stresses in your life at that time?*
- *Can you tell me what sort of things were going on then?*

A severely or moderately severely threatening event has occurred prior to onset of disorder that is unlikely to have resulted from the subjects own behaviour. (ie. the event can be seen as independent or uncontrollable).

Examples of stressful life events If any such event had occurred, use judgement to decide whether it was independent in the sense indicated above

Problems with primary support group: death; health problems in family; disruption of family; sexual/physical abuse

Educational: problems at school; discord with teachers or classmates

Social environment: loss of friend; break-up of important relationship; social isolation; acculturation/discrimination

Occupational: unemployment or threat of job loss; stressful job change; work conditions; discord at workplace

Housing: homeless; unsafe neighbourhood; discord with neighbour or landlord

Economic: extreme poverty; insufficient welfare support; heavy indebtedness

Legal: arrest; litigation; victim of crime

Other: disaster; war; catastrophic stress, e.g. witnessing a gruesome scene

0= No psychosocial stressor
1= Definite psychosocial stressor

3. Unemployed prior to onset (OP 7)

At the time you first became ill, were you working (or studying) (or a housewife) (or retired)?

0= Working full time or regular part-time (also includes: women working full time in the home; students attending classes on full time course)
1= The subject was not employed (or was retired) at onset as defined above.

4. Poor premorbid work adjustment (OP 9)

Tell me about jobs you had before you first became ill.

- *What was the longest time you have worked in one job before you first became ill?*
- *(If student ask about studies; if housewife, ask about standard of housework.)*

Refers to work history before onset of illness.

0= Good premorbid work adjustment
1= *If working* and unable to keep any job for more than 6 months, had a history of frequent changes of job or was only able to sustain a job well below that expected by his educational level or training at time of first psychiatric contact.
If housewife and persistently very poor standard of housework.
If student and badly failing to keep up with studies.

5. Poor premorbid social adjustment (OP 10)

Before you had psychiatric problems for the first time, what sort of person were you?

- *Were you the sort of person who had a lot of friends, or just a few special friends, or no friends?*
- *Did you get on easily with people?*
- *Did you tend to do things alone or with others?*
- *Were you a suspicious sort of person?*
- *Were you a moody sort of person?*
- *Had you ever been in trouble with the law before you became ill? Can you tell me about that?*

0= Good premorbid social adjustment
1= Poor premorbid social adjustment: patient found difficulty entering or maintaining normal social relationships, showed persistent social isolation, withdrawal or maintained solitary interests prior to onset of psychotic symptoms.

6. Premorbid personality disorder (OP 11)

Evidence of inadequate/schizoid/schizotypal/paranoid/cyclothymic/psychopathic/sociopathic personality disorder present since adolescence and prior to the onset of psychotic symptoms.

0= No premorbid personality disorder evident
1= Premorbid personality disorder evident

7. Coarse brain disease prior to onset (OP 15)

Were you suffering from any physical or neurological disorders before you first became psychiatrically unwell?

- *What was it?*
- *How long had you had it before psychiatric symptoms appeared?*

Considerable evidence from case notes, physical examination and/or special investigations of physical illness THAT COULD EXPLAIN ALL OR MOST MENTAL SYMPTOMS. This may include an overt brain lesion/s, marked metabolic disturbance, or drug induced state known to cause psychotic disturbance, confusion or alteration of conscious level. Note rate only if clear evidence present.

0= No prior brain disease evident
1= Prior brain disease evident

AMILY HISTORY

Family history of psychiatric disorder other than schizophrenia (OP 14)

Do you know of anyone in your family (including aunts, uncles, cousins) who has had a psychiatric disorder?

- *Did they see a doctor for that problem?*
- *Have they been in hospital for that problem?*
- *Do you know what treatment they received (medication, ECT)?*
- *Do you know what the doctors said was wrong with them?*

First or second degree relative has a psychiatric disorder (other than schizophrenia) severe enough to warrant psychiatric referral.

0= No family history
1= Family history of psychiatric disorder other than schizophrenia

---

Family history of schizophrenia (OP 13)

Do you know of anyone in your family (including aunts, uncles, cousins) who has had schizophrenia?

0= No family history of schizophrenia
1= Definite history of schizophrenia in first or second degree relative.

EPRESSION

ps py lt

Dysphoria (OP 37) Depressed Mood (S6.001)

I would now like to ask you about your mood (ie. how happy or sad you have been).
Have you ever been persistently in low spirits for more than a week?

If evidence of current mood disorder, ask the questions given below as given; if evidence of a past episode/episodes, adjust the questions accordingly and inquire about a recent episode of depression. If more than one episode, interview for either the most recent or the most severe depressive episode.

- *Have you been feeling down recently?*
- *Would you describe your mood as sad, downcast, gloomy, despairing or deeply depressed?*
- *Have you been feeling down for most of the day?*
- *How long has it been going on?*

Rate mood on subjective description. Remember that occasional sadness is part of normal human expression; it becomes pathological when it is persistent, pervasive, unresponsive, painful and out of proportion to events/circumstances.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Loss of pleasure (OP 39) Capacity for enjoyment (S6.005)

Have you been able to enjoy things as much as usual? If evidence of loss of capacity for enjoyment, ask:

- *How long has it been like that?*
- *How much of the time during that period have you been unable to enjoy things?*
- *If something good happens can you brighten up?*
- *When did you last really enjoy something? What?*
- *Do you keep up the appearance of enjoyment?*

Pervasive inability to enjoy activities. This should be a definite loss compared with the normal state.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month
NOTE: Use 1 as a default rating if symptom present but duration impossible to specify.

---

ps py lt

Suicide (OP 43) Suicide or self-harm (S 16)

Have you felt that life was not worth living?

- *Have you thought about harming yourself or even made an attempt at suicide? What happened?*

Thinking of suicide, wishing to be dead, attempts to kill self. Do not rate self-harming behaviour outside the context of suicidal ideation or intent.

0= Not present
1= Suicidal ideation present

SKIP: If NO to both Dysphoria (20) & Loss of pleasure (21) regardless of response to Suicide (22) ⇒ Elevated mood (40)

ps py lt

Diurnal variation (OP 38) Morning Depression (S6.009)

Is there any time of the day when the depression feels worse?

0= No depression, or not worst early
1= Regularly feels worst early in the day

---

ps py lt

Poor concentration (OP 41) Loss of concentration (S7.002)

Has your concentration been as good as usual or does your attention wander?

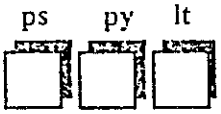
- *Are you able to read an article in the paper or watch a TV program right through?*
- *Do you find that you can't concentrate sufficiently to complete tasks properly eg;cooking, conversation, work?*
- *How long has your concentration been not as usual?*

Subjective complaint of being unable to think clearly, make decisions etc., which is a definite loss compared with the normal state.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt



Slowed activity (OP 24) Subjective feeling of retardation (S7.005)

Have you felt as though you were slowed down in your movements or speech?

- *As though everyone and everything else was moving or talking much faster?*
- *Have your arms and legs felt heavy, like lead?*
- *How long have you felt like this?*

Patient complains that he feels slowed up and unable to move. Others may report subjective feelings of retardation or retardation may be noted by examining clinician.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month
NOTE: Not if side effect of medication

---

ps py lt

6. Loss of energy / tiredness (OP 25) Loss of energy (drive) (S7.006)

Fatiguability and exhaustion (S3.007)

Have you had as much energy as usual?

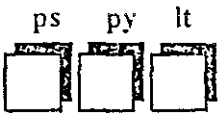
- *Do you get exhausted and worn out during the day, even when you haven't been working very hard?*
- *Do you feel you have to push yourself to do things?*
- *Have you lost your vital spark, as though everything was too much trouble; that you couldn't bother?*
- *How long have you had this?*

Subjective complaint of being excessively tired, with no energy. There should be a definite loss compared with the normal state.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt



7. Diminished Libido (OP 40) Loss of libido associated with depression (S8.025)

Have you found that your interest in sex was a lot less than usual?

Definite & persistent reduction in sexual drive or interest as compared with before onset of disorder.

0= Normal interest
1= Diminished interest

---

ps py lt

8. Poor appetite (OP 48) Decrease in appetite (S8.005)

What is your appetite like?

- *How long has it been poor?*
- *What was it due to? Has it been associated with recent symptoms?*

Not necessarily observed to be eating less.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

9. Increased appetite (OP 50)

How long have you been eating more than usual?

- *Sometimes when people feel depressed they comfort eat; do you do that?*

Patient reports increased appetite and/or 'comfort eating'.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Weight loss (OP 49) Loss of weight [from usual] in period (S8.006)

Has there been any change in weight during [the PERIOD]?

- *Did you lose weight?*
- *What was the most you lost in a month?*
- *Did you deliberately try to lose weight?*

0= No loss
1= Loss of 0.5kg (1 lb) per week over several weeks
2= A loss of at least 1kg (2 lbs) a week over several weeks
3= A loss of at least 5kg (10 lbs) over one year
NOTE: Do not rate those who have reduced weight as a result of dieting.

OTE: [the PERIOD] above and thereafter refers to the past episode of symptomatology which is being inquired about.

---

ps py lt

Weight gain (OP 51)

Did you gain weight?

- *What was the most you gained in a month?*
- *Do you think it was a result of medication you are taking?*

0= No gain
1= Gain of 0.5kg (1 lb) a week over several weeks
2= A gain of at least 1kg (2 lbs) a week over several weeks
3= A gain of at least 5kg (10 lbs) over one year.
NOTE: Do not rate if a result of medication

---

ps py lt

Initial insomnia (OP 44) Delayed sleep (S8.011)

Has there been any change in your sleep during [the PERIOD]?

- *Do you have problems falling asleep?*
- *How long ago did you lose your normal sleep pattern?*
- *How long does it take you to get to sleep?*
- *How long has it been going on for?*

Patient complains that he/she is unable to get off to sleep and lies awake for at least one hour.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Middle insomnia (OP 45) (S 8.13)

Do you wake during the night?

- *How often does this happen?*
- *How many times each night?*
- *Do you have difficulty getting back to sleep?*
- *How long do you lie awake?*

Most nights sleep are disturbed; patient awakes in the middle of sleep AND experiences difficulty in getting back to sleep.

0= No waking
1= Middle insomnia present

NOTE: If you only have information on "insomnia" score on initial insomnia (32) & middle insomnia (33)

---

ps py lt

Early morning waking (OP 46) Early waking (S8.014)

What time do you usually wake in the morning when you are sleeping normally?

- *Have you been waking much earlier than this?*
- *Was it because you had to get up early?*

Use frequency and time probes, making due allowance for unusual working hours. Patient complains that he/she persistently wakes up at least one hour earlier than usual waking time.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Excessive sleep (OP 47) Hypersomnia (S 8.016)

Do you find that you are very sleepy during the daytime and you have attacks of sleep that you can't resist? [when patient would normally have been awake].

- *How long has it been happening? How often? More or less every day?*
- *Does it happen only because you are not sleeping at night?*

Exclude daytime sleeping if due only to lack of sleep at night. Patient complains that sleeping at least two hours longer than usual, more or less daily.

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Excessive self reproach (OP 42) Pathological guilt (S 6.013)

Do you tend to blame yourself for something you have done or thought; or feel guilty or ashamed of yourself?

- *What do you blame yourself for or feel guilty about?*
- *What is it that you think you have done wrong?*
- *How much of the time, in [the PERIOD] have you been free of it?*

If delusional ('worst person in the world') rate both 36 and 37 (Delusions of guilt)

0= Not present
1= Present at least one week
2= Present at least two weeks
3= Present at least one month

---

ps py lt

Delusions of guilt (OP 69) (S6.018)

Do you really believe that that was so?(use information from item above)

Firm belief held by patient that they have committed some sin, crime or have caused harm to others despite absence of any evidence to support this.

0= No delusions of guilt
1= Delusions of guilt present

---

ps py lt

Delusions of poverty (OP 70)

Have you had concerns about your financial situation?

- *For example, thoughts about being ruined and doomed to die in poverty?*
- *With no means to support yourself or your family?*
- *Have you actually lost money or property?*

Firm belief held by patient that they have lost all or much of their money or property and have become impoverished despite in the absence of any evidence to support this.

0= No delusions of poverty
1= Delusions of poverty present

---

ps py lt

9. Nihilistic delusions (OP 71) Hypochondriacal delusions (S19.32)

How is your physical health?

- *Sometimes when people are depressed they believe that their body is unhealthy or diseased; for example, that their bowels are stopped up, or that their insides have rotted away.*
- *Have you had thoughts like that?*

Firmly held belief, ie. delusional intensity, in the context of depression, that some part of patient's body has disappeared or is rotting away or is affected by some devastating or malignant disorder despite a lack of any objective supporting evidence.

0= No nihilistic delusions
1= Nihilistic delusions present
NOTE: Often over rated; if in doubt, rate 0.

MANIA

ps py lt

1. Elevated mood (OP 35) Expansive mood (S10.001)

I have asked you some questions about depression; I now want to ask about whether you have ever felt the opposite of depressed, ie intensely happy or elated, without reason?

If evidence of current mood disorder, ask the questions below as given; if evidence of a past episode/episodes, adjust the questions accordingly and inquire about the most recent or the most severe episode.

- *So elated that it was unnatural?*
- *Can you describe that feeling?*
- *Was it out of character for you?*
- *How long did it last? Days? More than a week?*
- *Have you been taking drugs to make you 'high'?*

Patient's predominant mood is one of elation.

0= Not present
1= Present at least one week, OR if lasted < one week but hospitalised for affective disorder
2= Present at least two weeks

---

ps py lt

11. Irritable mood (OP 36)

I now want to ask whether you have ever felt very irritable or excessively annoyed with others, such that you lost your temper often?

- *Have other people commented on that or said you were much too impatient?*
- *How long did you feel like that?*

Patient's mood is predominantly irritable.

0= Not present
1= Present at least one week, OR if lasted < 1 week but hospitalised for affective disorder.
2= Present at least two weeks

SKIP: If NO to both Elevated mood (40) and Irritable mood (41) ⇒ Hallucinations (49)

ps py lt

12. Thoughts racing (OP 31) Pressing and racing thoughts (S10.004)

Do you find your thoughts crowding into and racing through your mind?

- *So you can't keep up with them?*
- *Could you describe that?*
- *How long did it last?*

Patient experiences thoughts racing through their head, or others observe flights of ideas and find difficulty in following what patient is saying or interrupting because of the rapidity and quantity of speech.

0= Not present
1= Present at least one week
2= Present at least two weeks

---

ps py lt

3. Distractibility (OP 21) (S10.006)

Have you been easily distracted by irrelevant things happening around you?

- *Have you been able to keep your attention on one subject long enough to deal with it properly?*
- *For how long have you been like this?*

Patient experiences difficulties concentrating on what is going on around him/her because attention is too easily drawn to irrelevant or extraneous factors.

0= Not present
1= Present at least one week
2= Present at least two weeks

---

ps py lt

4. Excessive activity (OP 19) Self-reported overactivity (S10.007)

Have you been more active than usual - so active that you or others thought something was wrong?

- *How long did at last?*
- *What sort of things were you doing?*

Patient is markedly overactive and has tremendous energy. Overactivity includes speech, social and sexual activity.

0= Not present
1= Present at least one week
2= Present at least two weeks

---

ps py lt

5. Reduced need for sleep (OP 22) Decreased need for sleep (S10.013)

Have you been able to manage with far less sleep than usual without seeming to get tired?

- *How much sleep have you needed?*
- *For how long has this been happening?*

Patient sleeps less but there is no complaint of insomnia. Extra waking time is usually taken up with excessive activities.

0= Not present
1= Present at least one week
2= Present at least two weeks

---

ps py lt

46. **Reckless activity** (OP 20) Actions based on expansive mood (S10.012)

Have you spent a lot more money than usual during [the PERIOD]?

- *Have any problems arisen? Do some people think you have been unwise?*
- *Have you done things you later regret?*
- *Have there been troubles in any other ways, such as reckless driving?*
- *How long has this been a problem?*

Patient is excessively involved in activities with high potential for painful consequences which is not recognised, eg. excessive spending, sexual indiscretions, reckless driving, gambling etc.

0= Not present
1= Present at least one week
2= Present at least two weeks

---

ps py lt

47. **Increased sociability** (OP 53) Socially embarrassing behaviour(S10.014)

Have you been more sociable than usual?

- *In what way?*
- *Do you think you were over familiar with other people?*
- *Have you done things that might seem foolish and you would not do normally?*

0= Not present
1= Over-familiarity
2= Loss of social inhibitions resulting in behaviour which is inappropriate to the circumstances and out of character.

---

ps py lt

48. **Increased self-esteem** (OP 56) Exaggerated self-esteem (S10.010)

Have you seemed specially efficient at work or in your daily activities, as though you had super powers or talents?

- *How do you explain this?*

Patient believes that he is an exceptional person with special powers, plans, talents or abilities. Rate positively here if overvalued idea. If in response to the above questions the patient describes delusions of grandiose abilities or grandiose identity, rate also delusional beliefs under grandiose delusions (63).

0= Not present
1= Present at least one week
2= Present at least two weeks

HALLUCINATIONS

I would now like to ask you some questions we ask everybody.

ps py lt

49. Hallucinations in any modality (OP 77) Probe for hallucinations (S17.001)

Auditory:
Do you ever seem to hear noises or voices when there is nobody about and no ordinary explanation seems possible?

Visual:
Or do you see or feel things other people cannot?

Olfactory:
Have you noticed unusual smells that you cannot account for?

Somatic:
Have you experienced any strange or inexplicable sensations in your body, e.g. of touch, or temperature, or pain, or floating, or being weightless? Or a crawling sensation under the skin?

Sexual:
Or any unusual sexual sensations?

- *Can you describe them?*
- *What is the explanation?*
- *Could these be your own thoughts?*

Any form of hallucination

0= Not present
1= Present throughout the day for several days or intermittently for one week.

SKIP: If NO to Hallucinations (49) ⇒ Subjective thought disorder (54)

ps py lt

50. Neutral voices or non-verbal hallucinations (OP 76) Non-verbal auditory hallucinations (S17.003)

Do you hear any noises like music or birds or muttering or whispering?

- *Can you describe it?*
- *Can you make out if there are any words?*

Includes pleasant or neutral voices and non verbal hallucinations.

0= Not present
1= Neutral voices or non verbal or auditory hallucinations present

---

SKIP: If NO Auditory hallucinations ⇒ Subjective thought disorder (54)

ps py lt

Accusatory / abusive / persecutory voices (OP 75)

Do you actually hear voices?

- *What did the voices say?*

Voices talking to the patient in an accusatory, abusive or persecutory manner.

0= Not present
1= Accusatory voices present

---

ps py lt

Running commentary (OP 74) Voice(s) commenting on thoughts or actions(S17.008)

Does a voice comment on what you are thinking or doing?

- *Do you hear a voice saying what you are reading, or describing what you are seeing on television as you see it?*
- *Do you hear them in your head, or through your ears, as though coming from outside?*
- *How often does it happen?*

0= Not present
1= Either internal voices ('pseudo' hallucinations) or external voices ('true' hallucinations)

---

ps py lt

Third person auditory hallucinations (OP 73) (S17.009)

Do you hear voices talking to each other or directly to you?

- *What do they say to each other?*
- *Do they talk about you between themselves?*

Rate two or more voices discussing the patient in the third person.

0= Not present
1= If either external ('true') or internal ('pseudo') hallucinations.

SUBJECTIVE THOUGHT DISORDER

ps py lt

4. Thought insertion (OP 66) (S18.006)

Do there seem to be thoughts in your mind which are not your own; which seem to come from elsewhere?

- *How do you think they get in your mind?*

0= Not present
1= Recognises that thoughts are being put into his head which are not his own & which have probably or definitely been inserted by some external agency.

---

ps py lt

5. Thought broadcast (OP 68) (S18.007)

Do your thoughts seem to be somehow public; not private to yourself, so that others can know what you are thinking?

- *Is it as though your thoughts leak out of you head?*

The experience must be described of thoughts diffusing out of patients mind so they can be experienced by others. The experience is passive, ie. not willed by patient. Exclude delusions that patient's own thoughts are quoted on TV, in newspapers, etc. Exclude merely beliefs and thoughts being read.

0= Not present
1= Thoughts diffusing out of his head so that they may be shared by others or even heard by others

---

ps py lt

6. Thought withdrawal (OP 67) (S18.010)

Are your thoughts actually taken out or sent out of your mind?

- *What is that like?*
- *Do they actually feel like they are being extracted out of your head?*

0= Not present
1= Thoughts ceasing in his head & may experience 'thought' block' which is interpreted as thoughts being removed ('stolen') by some external agency. Must describe active extraction, not 'thoughts seem to be outside my head'.

NOTE: Don't rate 'as if' statement, eg. my thoughts are so powerful that everyone must know them.

---

ps py lt

ıought echo (OP 72) (S18.5)

ıes a thought in your mind seem to be repeated as you think it, like an echo (not voices)?
What is it like?

0= Not present
1= Patient experiences thoughts repeated or echoed in his/her head, NOT auditory hallucinations.

---

ps py lt

ther primary delusions (OP 63) Delusional mood and perplexity S 18.001)

ıow want to ask you about any odd or unusual experiences you might have had.
Have you had the feeling that something odd is going on that you can't explain?
Would it seem strange to other people? Why?
What is it like?
Do you feel puzzled by strange happenings that are difficult to account for?
Do familiar surroundings seem strange?

Delusional mood is a strange mood in which the environment appears changed in a threatening way but the significance of the change cannot be understood by the patient who is usually tense, anxious or bewildered. Can lead to a delusional belief.
A delusional idea appears abruptly in the patient's mind fully developed and unheralded by any related thoughts or perceptions.

0= Not present
1= [Other primary] delusions present
NOTE: These are rare, and should be rated down if in doubt.

---

ps py lt

elusions of passivity (OP 61) Passivity Phenomena (S18.012)

you feel your will has been replaced by that of some force or power outside yourself?
Can you describe that? Is it like being a robot or zombie or puppet, controlled from elsewhere, without a will of your own? That your intentions have actually been replaced by those of some external power?
Are your thoughts under the control of some outside agency, so that you do not recognise your thoughts as your own?
Are your feelings controlled, or made by something, or somebody outside yourself?

Patient knows that his/her own feelings, impulses, volitional acts, or bodily sensations are controlled or imposed by an external agency. The experience of replacement is essential, the will is experienced as diminished or replaced by that of some other agency. The expansion of will in elation, so that patient feels eg. as powerful as if God were strengthening his will is not a delusion of control and should be excluded. Any answers obviously led by the questions must be verified against a free description by patient.

0= Not present
1= All experiences of influence where patient knows that his own feelings, impulses, volitional acts or somatic sensations are controlled or imposed by an external agency. Include all 'made' sensations, emotions or actions.
Note: Do not rate 'as if' answers.

---

ps py lt

Grandiose delusions (OP 57) Delusions of grandiose abilities (S10.016)

Delusions of grandiose identity (S10.017)

Have you thought that you were actually a special person because you have unusual abilities or talents? Or that you are famous, rich or related to prominent people?

Or, maybe, that you have been chosen by God for a special mission?

Could this really be true?

Patient has grossly exaggerated sense of own importance, has exceptional abilities or believes that he is rich or famous, titled or related to Royalty. Also included are delusions of identification with God, angels, the Messiah, etc.

0= Not present
1= Present any duration
2= Present at least 2 weeks

---

ps py lt

Bizarre delusions (OP 59) Bizarreness of delusions (S19.040)

Delusional memories and fantastic delusions (S19.019)

Is anything very unusual going on, that is hard to believe?

Would other people find it hard to believe? Can you give an example?

Are you influenced or affected X-rays, radio waves or machines or anything like that?

Strange, absurd or fantastic delusions, e.g. "my skin is inside out"; or "of course, I am growing my father's hair", or "there were real little people inside the TV". The delusional content may have a mystical, magical or 'science fiction' quality. Consider the patient's cultural, educational and social background before making a judgement.

0= Not present
1= Bizarre delusions present

Lack of insight (OP 85) Insight into Part Two positive symptoms (S24.030)

Do you feel you are /have been psychiatrically unwell?

Do you feel you need medication?

Rate here overall insight into the nature of psychotic symptoms more generally, including associated behaviour. Patient is unable to recognise that his experiences are abnormal or that they are the product of anomalous mental process, or recognises that his experiences are abnormal but gives a delusional explanation.

0= Insight present
1= Lack of insight.

Psychotic symptoms respond to neuroleptics. (OP 89)

Use all information available and, if relevant, ask additional questions as suggested below. Rate globally over total period.

0= No response to neuroleptics; or never been psychotic; or never had neuroleptics.
1= Illness appears to respond to any type of neuroleptics, (depot or oral) OR if relapse occurs when medication is stopped.

yr prior lt

2.08 Inhalants/solvents

0= not used 1= daily/almost daily 2= 1-2 days/wk 3= 2-4x month 4= <monthly 9= NK

yr prior lt

2.09 Other specify.....

0= not used 1= daily/almost daily 2= 1-2 days/wk 3= 2-4x month 4= <monthly 9= NK

2.10 *Have any of these drugs ever caused problems with family, friends, at work/school or with the police?*

- *Which ones?* Specify.....

0= no 1= yes

2.11 *Have you ever wanted to stop or cut down on any of these drugs but couldn't?*

- *Which ones?* Specify.....

0= no 1= yes

2.12 *Have you ever suffered from problems such as shaking, sweating, feeling very restless/nervous as a result of cutting down or stopping taking any of these drugs?*

- *Which ones?* Specify.....

0= no 1= yes

w rate the following questions on the basis of responses to the above questions.

Alcohol/drug abuse within one year of onset of psychotic symptoms (OP 12)

Alcohol abuse; quantity is excessive (rater judgement) where alcohol related complications occur, during the year prior to first psychiatric contact
Drug abuse; non-prescribed drugs are repeatedly taken or prescribed drugs are used in excessive quantities and without medical supervision in year prior to first psychiatric contact.

0= Not present
1= Present

Life time diagnosis of alcohol abuse/dependence (OP 78)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by alcohol;
OR Recurrent use in situations in which it is physically hazardous; or symptoms definitely indicative of dependence. One of the above must have occurred persistently for at least 1 month, or repeatedly over a longer period.

0= Not present
1= Present

Alcohol abuse/dependence with psychopathology (OP 81)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by alcohol; OR Recurrent use in situations in which it is physically hazardous; OR symptoms definitely indicative of dependence. These characteristics should be ACCOMPANIED by any of the preceding items describing psychopathology.

0= Not present
1= Present

Life time diagnosis of cannabis abuse/dependence (OP 79)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by cannabis;
OR Recurrent use in situations in which it is physically hazardous; OR symptoms definitely indicative of dependence. One of the above must have occurred persistently for at least one month, or repeatedly over a longer period.

0= Not present
1= Present

Cannabis abuse/dependence with psychopathology (OP 82)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by alcohol; OR Recurrent use in situations in which it is physically hazardous; OR symptoms definitely indicative of dependence. These characteristics should be ACCOMPANIED by any of the preceding items describing psychopathology.

0= Not present
1= Present

Life time diagnosis of other abuse/dependence (OP 80)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by cannabis; OR Recurrent use in situations in which it is physically hazardous; OR symptoms definitely indicative of dependence. One of the above must have occurred persistently for at least one month, or repeatedly

0= Not present
1= Present

Other abuse/dependence with psychopathology (OP 83)

Continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by alcohol: OR Recurrent use in situations in which it is physically hazardous; OR symptoms definitely indicative of dependence. These characteristics should be ACCOMPANIED by any of the preceding items describing psychopathology.

0= Not present
1= Present

Incoherence of speech (OP 27) (S24.012)

As above but with added distortion of grammar. Includes "word salad". This item should only be rated positive if extreme forms of formal thought disorder are manifested.

0= Not present
1= Meaning is obscured by distorted grammar, lack of logical connection between 1 part of a sentence & another or between sentences. Normal grammatical sentence construction has broken down.

Negative formal thought disorder (OP 29) Poverty of content of speech (S24.015)

Restricted quantity of speech (S24.016) Blocking (S24.014)

Blocking: Sudden interruption in speech without reason & then begins again on same or different topic. Not distraction, lapse of attention, lack of understanding.
Poverty of content of speech: talks freely but so vaguely that little information is given in spite of the number of words used. Exclude incoherence or flight of ideas.
Restricted quantity of speech: frequently fails to answer, questions have to be repeated, restricted to minimum necessary, no extra sentences; no additional comments.

0= Not present
1= Any of these items; thought block; poverty of speech, rate only if severe; restriction of quantity of speech

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Appendix I

CONSENT FORM

A Screening Instrument for Symptoms of Psychosis

Videotape of Interview

This research project has been approved by the Ethics Committee at Royal Perth Hospital and Edith Cowan University, School of Psychology.
If you do not agree to have this interview videotaped this will not affect your current or future treatment. If you agree to have this interview videotaped, the tapes will be securely stored in the Centre for Clinical Research in Neuropsychiatry and only accessed by myself and Professor Jablensky.

Further information may be obtained from Clinical Professor Millar, Chairman of the Ethics Committee on 9224 2199, the Principal Supervisor, Professor Jablensky, Western Australia University Department of Psychiatry on 9224 0290, the University Supervisor, Associate Professor Helmes, School of Psychology, Edith Cowan University, on 9400 5543 or the Chief Investigator, Borghild Bø on 9224 2901.

I do/do not agree to have this interview videotaped.

I,.....have read the information sheet and understand that the interview will be videotaped and the tape will only be used for research purposes.

Signature of Participant: _____ Date:_____

Signature of Researcher: _____ Date: _____

Appendix J

SELF-ADMINISTERED SCREENING FOR HEALTHY CONTROLS

Please answer the first question by filling in your age at the time you first saw a doctor for a psychological/psychiatric problem. Answer all the other questions by circling either "yes" or "no". If you are not sure, circle "unsure".

1. Have you ever been referred to or seen a doctor for a psychiatric problem?
   YES NO UNSURE If yes, what age were you? _____

2. Were there a lot of severe stresses in your life at that time?
   YES NO UNSURE

3. Were you employed and working at that time?
   YES NO UNSURE

4. Before you had psychiatric problems for the first time, did you get on easily with people? YES NO UNSURE

5. Were you suffering from any physical disease before you first became psychiatrically unwell? YES NO UNSURE

6. Do you know of anyone in your family (including aunts, uncles, cousins) who has had a psychiatric disorder? YES NO UNSURE

7. Have you ever been feeling sad or downcast persistently for more than a week?
   YES NO UNSURE

8. Have you had, at any time in your life, a period longer than a week during which your concentration was much worse than usual and you were unable to complete any task properly, e. g. cooking, conversation, work?
   YES NO UNSURE

9. Have you had, at any time in your life, a period longer than a week during which you were slowed down in your movements or speech?
   YES NO UNSURE

10. Have you had, at any time in your life, a period longer than a week during which you were
    feeling exhausted and worn out during the day, even when you hadn't been working very hard?
    YES NO UNSURE

11. Have you had, at any time in your life, a period longer than a week during which you lost your normal sleep pattern?
    YES NO UNSURE

12. What about the opposite-have you ever felt intensely happy or elated for more than a week without reason?
    YES NO UNSURE

13. Have you ever felt, for more than a week, very irritable or excessively annoyed with others, such that you lost your temper often?
    YES NO UNSURE

14. Have you had, at any time in your life, a period lasting longer than a week during which you found your thoughts crowding into your mind or racing through your mind?
    YES NO UNSURE

15. Have you had, at any time in the past, a period longer than a week during which you have been far more active than usual?
    YES NO UNSURE

16. Have you had, at any time in the past, a period longer than a week during which you were able to manage with far less sleep than usual without getting tired?
    YES NO UNSURE

17. Have you ever felt, for more than a week, far more sociable than usual?
    YES NO UNSURE

18. Have you ever had the feeling that something odd was going on that was hard to believe or explain?
    YES NO UNSURE

19. Have you ever felt that people were too interested in you, as if singling you out?
    YES NO UNSURE

20. Have you had an alcoholic drink in the last month?
    YES NO UNSURE

21. Have you ever felt you should cut down on your drinking?
    YES NO UNSURE

22. Have you ever smoked?
    YES NO UNSURE

Appendix K

INFORMATION SHEET
A Screening Instrument for Symptoms of Psychosis

I am currently conducting research at Royal Perth Hospital towards completing my Masters of Clinical Psychology at Edith Cowan University. Thank you for considering taking part in this study.

The aim of this study is to develop a self administered questionnaire to detect unusual subjective experiences and to find out how frequently they occur. The questionnaire lists a series of statements and I am interested to find out if you have had any of these experiences. It is anticipated that the instrument would help clinicians and researchers in the study of these experiences in psychiatric conditions.

In this study we are asking individuals diagnosed with schizophrenia and other disorders to participate. If you choose to participate in this study you are asked to have one interview (45 minutes) and complete a questionnaire (15 minutes). The questions and statements asked are related to experiences which some people may have. In total, this will take approximately 60 minutes in addition to breaks as required.

The interview will be conducted by the researcher (myself). To ensure that all information is gathered in the same manner one in ten of the interviews will be videotaped and reviewed by a senior researcher. The questionnaire will be completed by yourself in the presence of the researcher. All information you provide, including the video, will only be available to the research team.

Your participation in this study is anonymous, voluntary and you may withdraw at any time during your participation. You are unlikely to be upset or distressed by the statements in the questionnaire. If you choose not to participate in this study this will not influence your current or future treatment rights.

This research project has been approved by the Ethics Committee at Royal Perth Hospital and Edith Cowan University, School of Psychology. Further information may be obtained from Clinical Professor Millar, Chairman of the Ethics Committee on 9224 2199, the Principal Supervisor, Professor Jablensky, Western Australia University Department of Psychiatry on 9224 0290, the University Supervisor, Associate Professor Helmes, School of Psychology, Edith Cowan University, on 9400 5543 or the Chief Investigator, Borghild Bø on 9224 2901.

Kind regards

Borghild Bø, ph. 9224 2901
Professor A Jablensky
University Department of Psychiatry
Medical Research Foundation
Level 3, Rear of Murray St.
PERTH WA 6000

Associate Professor E Helmes
School of Psychology
Edith Cowan University
JOONDALUP WA 6027

Appendix L

CONSENT FORM

A Screening Instrument for Symptoms of Psychosis

Please read the attached information sheet and complete this from.

Participant's Name: _____

Name of Researcher: Borghild Bø

Name of Research Supervisors: Professor Jablensky
Associate Professor Helmes

This research project has been approved by the Ethics Committee at Royal Perth Hospital and Edith Cowan University, School of Psychology and will only be used for research purposes. The information will be secured during the study but destroyed at the end. The research data from this study will be published and participants will not be identifiable by name or any other way. Any information about people will be group data in which no one person can be identified. Your participation is voluntary and you may withdraw at any time. If you choose not to participate this will not affect your current or future treatment rights.

Further information may be obtained from Clinical Professor Millar, Chairman of the Ethics Committee on 9224 2199, the Principal Supervisor, Professor Jablensky, Western Australia University Department of Psychiatry on 9224 0290, the University Supervisor, Associate Professor Helmes, School of Psychology, Edith Cowan University, on 9400 5543 or the Chief Investigator, Borghild Bø on 9224 2901.

I,.....have read the above information and the Information Sheet. Any questions I have asked have been clearly answered to my satisfaction. I consent to participate in this research, knowing that I may withdraw at any time without affecting my rights. I agree that research data gathered for the study may be published so long as I am not identifiable.

Signature of Participant: _____ Date:_____

Signature of Researcher: _____ Date: _____

Appendix M

Table M1
Number and percentage of positive items for probands

Item #	Label	Males (n = 27)		Females (n = 22)		Total (n = 49)	
		N	%	N	%	N	%
1	Worry thinking	15	55.6	9	40.9	24	49.0
2	As if on film	12	44.4	7	31.8	19	38.8
3	Unable react	17	63.0	13	59.1	30	61.2
4	Gaps memory	14	51.8	7	31.8	21	42.8
5	Voices inside head	14	51.8	10	45.4	24	49.0
6	Limbs not moving	5	18.5	2	9.1	7	14.3
7	Conscious step	17	63.0	16	72.7	32	65.3
8	Noises distract lot	9	33.3	10	45.4	19	38.8
9	Hear voices	10	37.0	5	22.7	15	30.6
10	Faces distorted	5	18.5	3	13.6	8	16.3
11	Too many thoughts	20	74.0	17	77.0	37	75.5
12	Speaking out loud	12	44.4	9	40.9	21	42.8
13	Raise arm cannot	2	7.4	1	4.5	3	6.12
14	No enjoy	19	70.4	15	68.2	34	69.4
15	Blurry	12	44.4	10	45.4	22	44.9
16	Voices talking to	10	37.0	2	9.1	12	24.5
17	Noices mixed up	10	37.0	4	18.2	14	28.6
18	Ground moving	6	22.2	2	9.1	8	16.3
19	Voices each other	9	33.3	2	9.1	11	22.4
20	Difficult sentences	15	55.6	5	22.7	20	40.8
21	No aware around	10	37.0	5	22.7	15	30.6
22	Voices arguing me	5	18.5	2	9.1	7	14.3
23	Reduced size	4	14.8	3	13.6	7	14.3
24	Concentration	18	66.7	14	63.6	32	65.3
25	Hesitate word	12	44.4	6	27.3	18	36.7
26	Fix gaze firmly	4	14.8	4	18.2	8	16.3
27	Not sure I can	10	37.0	5	22.7	15	30.6
28	Thoughts aloud	12	44.4	9	40.9	21	42.9
29	Thoughts in order	18	66.7	11	50.0	29	56.9
30	Texts of any length	18	66.7	14	63.6	32	65.3
31	Talk lose word	20	74.0	14	63.6	34	69.4
32	Thoughts repeated	16	59.3	10	45.4	26	53.1
33	Brain emptied	19	70.4	11	50.0	30	61.2
34	Objects moved	3	11.1	1	4.5	4	8.2
35	Thoughts not own	12	44.4	4	18.2	16	32.7
36	Too alert	15	53.6	10	43.5	25	49.0
37	Routine muddle	15	55.6	5	22.7	20	40.8
38	Walls falling	3	11.1	5	22.7	8	16.3
39	Thoughts into mind	10	37.0	2	9.1	12	24.5
40	Sounds too loud	12	44.4	8	36.4	20	40.8
41	Concentrate wrong	15	55.6	8	36.4	23	46.9
42	Anxious everything	20	74.1	15	68.2	35	71.4
43	Thoughts public	11	40.7	3	13.6	14	28.6
44	Face different	16	59.3	8	36.4	24	49.0

Item #	Label	Males (n = 27)		Females (n = 22)		Total (n = 49)	
		N	%	N	%	N	%
45	Mind blank	19	70.4	9	40.9	28	57.1
46	Thoughts taken	5	18.5	5	22.7	10	20.4
47	Thoughts outside	10	37.0	5	22.7	15	30.6
48	Not see whole	4	14.8	2	9.1	6	12.2
49	Effort arms control	7	25.9	9	40.9	16	32.7
50	Words not quickly	18	66.7	9	40.9	27	55.1
51	Will replaced force	10	37.0	3	13.6	13	26.5
52	Blurred not giddy	9	33.3	7	31.8	16	32.7
53	Can't form picture	17	63.0	8	36.4	25	51.0
54	Words make sense	13	48.1	9	40.9	22	44.9
55	Thoughts blown	12	44.4	5	22.7	17	34.6
56	Know what done	18	66.7	12	54.5	30	61.2
57	Robot controlled	7	25.9	8	36.4	15	30.6
58	See not sure	10	37.0	7	31.8	17	34.6
59	Objects move	5	18.5	1	4.5	6	12.2
60	Arms goes by itself	9	33.3	6	27.3	15	30.6
61	Things out control	6	22.2	3	13.6	9	18.4
62	Letters distorted	6	22.2	3	13.6	9	18.4
63	Paralysed	12	44.4	4	18.2	16	32.7
64	Happy or angry	12	44.4	9	40.9	21	42.9
65	Controlled	11	40.7	4	18.2	15	30.6
66	Stop sentence	13	48.1	10	45.5	23	46.9
67	Affects too strongly	14	51.8	14	63.6	28	57.1
68	Trouble meaning	14	51.8	4	18.2	18	36.7
69	Visualise faces	6	22.2	4	18.2	10	20.4
70	Trouble conversatio	15	55.6	5	22.7	20	40.8
71	Long sentences	16	59.3	8	36.4	24	49.0
72	Not act way I want	10	37.0	7	31.8	17	34.6
73	Grasp going on	11	40.7	6	12.2	17	34.6
74	Concentr. Worse	20	74.1	12	54.5	32	65.3
75	Name called out	12	44.4	8	36.4	20	40.8

Table M2
Number and percentage of positive items for healthy controls

Item #	Label	Males (n = 8)		Females (n = 40)		Total (n = 48)	
		n	%	n	%	n	%
1	Worry thinking	0	0	1	2.5	1	2.1
2	As if on film	0	0	2	5.0	2	4.2
3	Unable react	1	12.5	3	7.5	4	8.3
4	Gaps memory	0	0	2	5.0	2	4.2
5	Voices inside head	0	0	0	0	0	0
6	Limbs not moving	0	0	0	0	0	0
7	Conscious step	0	0	5	12.5	5	10.4
8	Noises distract lot	0	0	1	2.5	1	2.1
9	Hear voices	0	0	0	0	0	0
10	Faces distorted	0	0	0	0	0	0
11	Too many thoughts	0	0	2	5.0	2	4.2
12	Speaking out loud	0	0	1	2.5	1	2.1
13	Raise arm cannot	0	0	0	0	0	0
14	No enjoy	0	0	0	0	0	0
15	Blurry	1	12.5	1	2.5	2	4.2
16	Voices talking to	0	0	0	0	0	0
17	Noices mixed up	1	12.5	0	0	1	2.1
18	Ground moving	0	0	0	0	0	0
19	Voices each other	0	0	0	0	0	0
20	Difficult sentences	0	0	0	0	0	0
21	No aware around	0	0	0	0	0	0
22	Voices arguing me	0	0	0	0	0	0
23	Reduced size	0	0	0	0	0	0
24	Concentration	0	0	0	0	0	0
25	Hesitate word	1	12.5	1	2.5	2	4.2
26	Fix gaze firmly	1	12.5	3	7.5	4	8.3
27	Not sure I can	0	0	0	0	0	0
28	Thoughts aloud	0	0	1	2.5	1	2.1
29	Thoughts in order	0	0	0	0	0	0
30	Texts of any length	0	0	4	10.0	4	8.3
31	Talk loose word	0	0	7	17.5	7	14.6
32	Thoughts repeated	2	25.0	2	5.0	4	8.3
33	Brain emptied	0	0	1	2.5	1	2.1
34	Objects moved	0	0	1	2.5	1	2.1
35	Thoughts not own	0	0	0	0	0	0
36	Too alert	0	0	2	5.0	2	4.2
37	Routine muddle	0	0	0	0	0	0
38	Walls falling	0	0	0	0	0	0
39	Thoughts into mind	0	0	0	0	0	0
40	Sounds too loud	1	12.5	1	2.5	2	4.2
41	Concentrate wrong	0	0	0	0	0	0
42	Anxious everything	0	0	0	0	0	0
43	Thoughts public	0	0	0	0	0	0
44	Face different	1	12.5	3	7.5	4	8.3
45	Mind blank	0	0	2	5.0	2	4.2
46	Thoughts taken	0	0	0	0	0	0
47	Thoughts outside	0	0	0	0	0	0

Item #	Label	Males (n = 8)		Females (n = 40)		Total (n = 48)	
		n	%	n	%	n	%
48	Not see whole	1	12.5	0	0	1	2.1
49	Effort arms control	0	0	0	0	0	0
50	Words not quickly	0	0	3	7.5	3	6.3
51	Will replaced force	0	0	0	0	0	0
52	Blurred not giddy	0	0	1	2.5	1	2.1
53	Can't form picture	0	0	1	2.5	1	2.1
54	Words make sense	1	12.5	1	2.5	2	4.2
55	Thoughts blown	1	12.5	0	0	1	2.1
56	Know what done	1	12.5	2	5.0	3	6.3
57	Robot controlled	0	0	0	0	0	0
58	See not sure	0	0	1	2.5	1	2.1
59	Objects move	0	0	0	0	0	0
60	Arms go by itself	0	0	0	0	0	0
61	Things out control	0	0	0	0	0	0
62	Letters distorted	0	0	2	5.0	2	4.2
63	Paralysed	1	12.5	0	0	1	2.1
64	Happy or angry	0	0	0	0	0	0
65	Controlled	0	0	0	0	0	0
66	Stop sentence	0	0	6	15.0	6	12.5
67	Affects too strongly	0	0	0	0	0	0
68	Trouble meaning	0	0	0	0	0	0
69	Visualise faces	0	0	0	0	0	0
70	Trouble convers.	0	0	0	0	0	0
71	Long sentences	0	0	0	0	0	0
72	Not act way I want	0	0	0	0	0	0
73	Grasp going on	0	0	0	0	0	0
74	Concentr. Worse	0	0	1	2.5	1	2.1
75	Name called out	0	0	1	2.5	1	2.1

Appendix N

PSYCHOSIS SYMPTOM SCREENING INSTRUMENT AND ITS SECTIONS/CATEGORIES

1. Schneider's first-rank symptoms

Item no.	Item label
(12)	Thoughts spoken aloud*
(28)	Loud thoughts
(32)	Thought echo*
(39)	Thought insertion*
(35)	Alien thoughts
(43)	Thoughts public*
(47)	Thoughts outside head
(46)	Thought withdrawal*
(45)	Thought block*
(16)	Voices commenting*
(19)	Voices discussing
(22)	Voices arguing
(51)	Will replaced*
(57)	Robot, zombie or puppet
(65)	Unusual experiences of being controlled

2. Other subjective thought disorder

Item no.	Item label
(1)	Worry about own capacity for thinking
(11)	Confused because too many thoug d thoughts
(24)	Worse concentration due to jumb
(29)	Effort putting thoughts in order
(33)	Brain empty

3. Other verbal hallucinations

Item no.	Item label
(5)	Voices inside head
(9)	Voices not own thoughts
(75)	Heard name called

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* Schneider's first rank category includes 8 FRS. The non asterisked items are alternative forms of asking the same symptom and was therefore not included in the statistical analysis unless otherwise specified.

4. Subjective language and speech disorders

Item no.	Item label
(20)	Difficult to form long sentences
(25)	Hesitation before a common word when reading
(30)	Losing the thread when reading
(31)	Losing the intended word when speaking
(41)	Wrong words coming into mind
(50)	Words not coming to mind quickly enough
(54)	Hearing the words but unable to make sense of them
(66)	Stopping in the middle of a sentence without intending to
(68)	Trouble grasping meaning correctly when reading
(70)	Withdrawal due to difficulty following conversations
(71)	Difficulty grasping meaning of long sentences

5. Control of movements/somatopsychic derealisation

Item no.	Item label
(60)	Movement going on by itself
(6)	Not feeling own limbs moving when making a movement
(61)	Walking, running etc. not under own control
(44)	Expression of face different from what intended
(49)	Effort to keep arms and legs under control
(72)	Unable to control what one is doing
(27)	Unsure if able to execute a movement
(63)	Sometimes momentarily paralysed
(3)	Unable to react at times

6. Disturbances of visual perception

Item no	Item label
(15)	Things out of focus
(52)	Blurred or hazy
(23)	Everything reduced in size
(26)	Fix gaze, otherwise everything swims
(38)	Walls falling in
(48)	Seeing only part of a face
(59)	Objects seem to move when not looking
(62)	Letters distorted or upside down
(10)	People's faces distorted

7. Disturbance of visualisation

Item no.	Item label
(53)	Cannot form mental picture properly
(69)	Can no longer visualise faces

8. Disturbances of auditory perception

Item no.	Item label
(40)	Ordinary sounds far too loud
(8)	Distracted by ordinary noises
(17)	Unable to distinguish between noises

9. Memory, attention and concentration

Item no.	Item label
(4)	Gaps in memory
(74)	Concentration getting worse
(56)	For a moment, not knowing what just done or said
(73)	Difficulty following both speech and pictures on TV

10. Loss of normal automatisms

Item no.	Item label
(7)	Conscious of every step when walking
(37)	Daily routine muddles since habits forgotten

11. Awareness of self versus external world

Item no.	Item label
(21)	No longer aware of what is around
(58)	Unsure if real or imagined
(18)	The ground standing on is moving
(36)	Too alert, watch everything, though not want to

12. Emotional response

Item no.	Item label
(14)	No longer able to enjoy (anhedonia)
(42)	Anxious about nearly everything (free floating anxiety)
(64)	Excited but not knowing whether happy or angry (agnosia for own feeling states)
(67)	Strongly affected by everything (increased impressionability)

Appendix O

Table O1
Chi-square (df) of questionnaire items and DIP symptoms

Questionnaire item	DIP symptom	x^2	p	p[a]
(39) Thought put into mind	(54) Thought insertion	.12	.73	
(43) Thoughts public (47) Thoughts outside head	(55) Thought broadcast	6.61	< .05	.01
(46) Thoughts taken out of mind	(56) Thought withdrawal	1.5	.22	
(32) Thoughts repeated over	(57) Thought echo	5.5	< .05	.02
(51) Will replaced by force (57) Robot without a will of own (65) Unusual experiences	(59) Delusions of passivity	21.02	< .01	< .004
(16) Voices talking what doing (19) Voices talking not directly (22) Voices arguing themselves	(52) Voices commenting (53) Third person AH	.36	.55	
(21) Not aware what around (58) See not sure imagined	(58) Delusional mood (59) Passivity (60) Delusions persecution (61) Delusions of reference (62) Delusional perception (64) Bizarreness of delusions	.08	.78	
(14) No enjoy myself	(21) Capacity for enjoyment	4.17	< .05	.04
(4) Huge gaps memory (74) Concentration worse (56) Not know done or said (73) Difficult picture. & speech	(24) Loss of concentration	5.06	< .05	.03
Percentage +ve FRS score (12) Thoughts spoken aloud (32) Thought echo (39) Thought insertion (43) Thoughts public (46) Thought withdrawal (45) Thought block (16) Voices commenting (51) Will replaced	Any (54) Thought insertion (55) Thought broadcast (56) Thought withdrawal (57) Thought echo	25.12	< .01	< .004
Score other subj. thought D (1) Worry own capacity thinking (11) Confused too many thought (24) Worse conc. Jumbled thoug (29) Effort thoughts in order (33) Brain empty	Any FRS (52) Voices commenting (53) Third person AH (54) Thought insertion (55) Thought broadcast (56) Thought withdrawal (57) Thought echo (58) Delusional mood (59) Passivity (62) Delusional perception	1.37	.24	

[a]Bonferonni correction.

Appendix P

Table P1
Shrout and Fleiss' formula of estimating cut-off scores

	Psychotic	Non-psychotics
Screen-positive (FRS score > 2)	a	b
Screen-negative (FRS score < 2)	c	d

Sensitivity = a/(a+c); Specificity = d/(b+d);
PPV = a/(a+b); NPV = d/(c+d)

Explanation of dependent variables

Sensitivity: the percentage of correctly identified cases of psychotic illness amongst psychiatric patients who have the disorder.

Specificity: the percentage of correctly identified cases of non-psychotics amongst psychiatric patients.

PPV: the proportion of cases identified to be psychotic by the PSSI have the disorder.

NPV: the proportion of cases identified not to be psychotic by the PSSI do not have the disorder.

Appendix Q

Table Q1
T-test (df) values for comparison of responding to PSSI category scores: Probands and Controls

Item group	t (df)
FRS	8.47 (95)***
Other subjective thought disorder	15.4 (95)***
Other verbal hallucinations	7.23 (95)***
Subjective language & speech disorders	9.47 (95)***
Control of movements	8.61 (95)***
Disturbances of visual perception	5.38 (95)***
Other BS[a]	11.76 (95)***
Other BS[b]	13.65 (95)***
BS[c]	11.97 (95)***
Adjusted total PSSI score[d]	11.99 (95)***
Total PSSI score[e]	11.34 (95)***

Note. See Appendix N for a list of the categories referred to in this Table.
[a]This includes all items in categories 7 to 11. [b]This includes all items in categories 7 to 12. [c]This includes all the BS in categories 2 to 12. [d]This includes all items in categories 1 to 11. [e]This includes all items in categories 1 to 12.
*** $p < .001$.

Appendix R

Table R1
Chi-Square (df) values for comparison of responding to FRS items by probands and controls

Item no.	Item label	X^2 (df)	p[a]
12	Speaking out loud	30.31 (3)**	< .003
28	Thoughts aloud	24.58 (2)**	< .003
32	Thoughts repeated	22.91 (2)**	< .003
39	Thoughts into mind	20.84 (3)**	< .003
35	Thoughts not own	27.87 (2)**	< .003
43	Thoughts public	23.15 (3)**	< .003
47	Thoughts outside	20.19 (2)**	< .003
46	Thoughts taken	17.38 (2)**	< .003
45	Mind blank	41.10 (2)**	< .003
16	Voices talking to	20.19 (2)**	< .003
19	Voices each other	17.38 (2)**	< .003
22	Voices arguing me	12.14 (2)**	< .003
51	Will replaced force	26.26 (3)**	< .003
57	Robot controlled	21.51 (3)**	< .003
65	Controlled	23.15 (3)**	< .003

[a]Bonferonni correction.
**p < .01.